ICESSU
09 -10 April 2025 | Manila, Philippines

ICESSU 2025

5th International Conference on Engineering, Social-Sciences and Humanities

09th-10th April, 2025
Manila, Philippines

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IFERP Academy
Explore Your Research Journey...

Organized by:

Mullion Facade Engineering School, Philippines
Bulacan State University, Philippines
University of Batangas, Philippines
University of the Immaculate Conception, Philippines &
IFERP Academy - Philippines Society

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5th International Conference on Engineering, Social-Sciences and Humanities (ICESSU-2025), Manila, Philippines

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Conference Theme

ETHICAL CONSIDERATIONS IN ENGINEERING FOR SUSTAINABLE DEVELOPMENT: INSIGHTS FROM SOCIAL SCIENCES AND HUMANITIES

Conference Venue

Acacia Hotel Manila
5400 E Asia Dr, Alabang,
Muntinlupa, 1781 Metro Manila,
Philippines

Preface

We are delighted to extend a warm welcome to all participants attending 5th International Conference on Engineering, Social-Sciences and Humanities (ICESSU-2025) organized by Mullion Facade Engineering School (Philippines), Bulacan State University (Philippines), University of Batangas (Philippines) and IFERP Academy-Philippines Society on April 09th-10th, 2025. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the field of Educational Research. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICESSU-2025 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Engineering, Social-Sciences and Humanities. All submitted papers were subject to rigorous peerreviewing by 2–4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Engineering, Social-Sciences and Humanities but also serve as a valuable summary and reference for further research in this field.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the ICESSU-2025.

Since January 2025, the Organizing Committees have received more than 150+ manuscript papers, covering all aspects of ICESSU-2025. After review, approximately 45+ papers were selected for inclusion in the proceedings of ICESSU-2025. We would like to thank all participants at the conference for their significant contribution to its success.

We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality.

About ICESSU 2025

ICESSU-2025 is 5th International Conference on Engineering, Social Sciences, And Humanities, which is scheduled to take place on the 09th & 10th of April 2025 in the Philippines. This is organized by the IFERP Academy-Philippines Society.

The goal of this international conference on multidisciplinary research and education is to provide a stage for researchers, scholars, and practitioners to share knowledge on the latest technological advancements. If you want to spread awareness of your incredible research findings and other work, this conference allows you to present your papers and articles in reputed journals.

Currently, multidisciplinary research has become the most viable and efficient way to solve the problem. In this era of rapidly changing society, many kinds of socio-economic problems, related to other disciplines such as politics, anthropology, psychology, have arisen which require a holistic approach to find their solution.

By emphasising on collaborative multidisciplinary research, the "5th ICESSU-2025", will offer the following benefits to participants -

1. Access To Expertise ; **2.** Stimulates Out-Of-The-Box Thinking ; **3.** Formal Division of Labour ; **4.** Collaboration Reduces The Isolation of Researchers ; **5.** Transfer of Knowledge & Skills; **6.** Increased Visibility of Work

Purpose the Conference

The International conference provides a stage for meaningful discussions around the latest developments, current issues, and challenges in the fields of engineering, social science, and humanities. By bringing together experts from different parts of the world, ICESSU 2025 aims to promote innovation and inspire new ideas.

Participants will engage in informative sessions that showcase innovative solutions, emerging technologies, and best practices, fostering an environment conducive to learning and networking. Ultimately, this conference aims to encourage progress and multi-disciplinary collaboration. This International engineering conference will also focus on empowering individuals and organizations to contribute to the collective advancement of innovation worldwide.

Objective the Conference

ICESSU – 2025 aims to bring engineering, Social Science, and Humanities research areas on a global platform. By providing a stage for collaboration, ICESSU aims to enhance the application of research in practical contexts. You can refine your skills, exchange ideas, and build networks by engaging with experts, high-level delegates, and peers. 5th International Conference on Engineering, Social Sciences and Humanities (ICESSU) isn't merely a conference; it's a collaborative initiative that actively shapes the research trajectory and its applications.

Join us in Manila, Philippines, from April 09th to 10th, 2025, to embrace the journey and empower the future of interdisciplinary knowledge. Register now and become a catalyst for progress at ICESSU 2025, where each moment is an opportunity to contribute to a transformative and innovative future.

About IFERP

IFERP Academy is a non-profitable professional association meant for research and development in the fields of Engineering, Science & Technology. With a global presence, IFERP is committed to advancing knowledge across diverse disciplines through international conferences, workshops, and scholarly publications. We provide help, assistance, and direction in preparation for SCI and SCIE journal publishing. These journals undergo a rigorous peer-review process to ensure the quality publication of the most fascinating findings on Arts & Science, Management, Engineering, and Technology.

IFERP has established robust scientific, academic, and industry networks throughout Asia, the Middle East, and Europe. Some of the countries that IFERP has its presence, include Iraq, Maldives, Thailand, Malaysia, Singapore, Philippines, Indonesia, Taiwan, Vietnam, UAE, Australia, Japan, Sri Lanka, Nepal, Ghana, and Africa. As a hub for educational and research initiatives, IFERP plays a pivotal role in shaping the landscape of global academia, fostering innovation, and contributing to the advancement of knowledge across borders.

What We Do?

- We encourage convenient access to academic resources and support for all the aspirants and research scholors in urban and rural areas.
- IFERP organizes public education programmes, Workshops, Conferences, Webinars, Seminars, Guest Lectures, Short Term Training Programme, Faculty Development programme in the field of Engineering, Science & Technology.
- IFERP is dedicated to inquisitiveness, innovations and recent trends and developments in the field of Engineering & Technology.
- IFERP believes in knowledge sharing by collaborating with other Universities, organizations/Associations, to bring a better tomorrow.

Mission

Upskilling the knowledge hub through technological innovation and excellence for the benefit of humanity

Vision

A Digitally equipped robust, dynamic & swift professional community integrating academics & industry for upgraded technical knowledge implementation

Value

IFERP values the restoration of high-level technological research, learning, collaboration, resource sharing & community-building traditions

Goal

To serve as the foundation for all technological progress and advancement activities around the world

From IFERP'S Director

Mr. A. Siddth Kumar Chhajer
MD & Founder, IFERP
Technoarete Group

On behalf of IFERP & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers.

The goal of the 5th International Conference on Engineering, Social-Sciences and Humanities (ICESSU-2025) is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in the field of Educational Research.

This conference creates solutions in different ways and to share innovative ideas in the field of Engineering, Social-Sciences and Humanities. ICESSU-2025 provides a world class stage to the Researchers, Professionals, Scientists, Academicians and Students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

5th International Conference on Engineering, Social-Sciences and Humanities (ICESSU-2025) will explore the new horizons of innovations from distinguished Researchers, Scientists and Eminent Authors in academia and industry working for the advancements in Science and Engineering from all over the world. ICESSU-2025 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the field of Engineering, Social-Sciences and Humanities.

From IFERP'S CEO

Mr. Rudra Bhanu Satpathy
CEO & Founder, IFERP
Technoarete Group

IFERP is hosting the 5th International Conference on Engineering, Social-Sciences and Humanities (ICESSU-2025) this year in month of April, 2025. The main objective of ICESSU-2025 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts.

Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader. I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of Organizing Committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

Workshop Speakers

Title: Solving Real-World Problems with AI at the Edge

Mr. Paul Ryan Santiago

Faculty Member, ECE Department,
Bulacan State University, Philippines

Title: Ethical Considerations in Engineering for Sustainable Deveopment

Dr. Marizen B. Contreras, PIE, MSME

Associate Professor III, College of Engineering,
University of Batangas, Philippines

Exclusive Speakers

Title: Digital Transformation in Research, Extension, and Innovation in Higher Education Institutions

Dr. Keno C. Paid

Vice President for Research, Extension, and Innovation
Bulacan State University, Philippines

Title: Promoting Futures Thinking Literacy in STEM Education

Mr. Ronilo P. Antonio

College of Education,
Bulacan State University, Philippines

Title: Artificial Intelligence Utilization Scale for Research Writing

Dr. Joseline M. Santos

Director, Research Management Office,
Bulacan State University, Philippines

About Keynote Speaker

Dr. Sudhakar Kumarasamy

Faculty of Mechanical and Automotive Engineering
Principal research fellow at Automotive Engineering Centre
Universiti Malaysia Pahang Al Sultan Abdullah, Malaysia.

With over ten years of experience in energy engineering and management, Sudhakar Kumarasamy is a Senior Lecturer at the Faculty of Mechanical and Automotive Engineering Technology, Universiti Malaysia Pahang (UMP) and Principal Research fellow at Automotive Engineering Centre, Universiti Malaysia Pahang (UMP). He is a Chartered Mechanical Engineer (CEng) registered with the Institution of Engineers India, Chartered Solar Engineer registered with Solar Energy Society of India and a Certified Energy Manager (CEM) and Auditor (CEA) by the Bureau of Energy Efficiency, Government of India. He has developed and taught courses on various topics related to energy, such as internal combustion engines, Thermodynamics, Heat transfer, Fluid mechanics, renewable energy, energy conservation, and energy policy. As a researcher and academic leader, he has received multiple awards and recognition for his outstanding contributions to the field of energy engineering and sustainability. He has supervised and mentored more than 10 PhD and 45 Masters students and published over 190 journal papers with more than 10,000 citations. He has also secured and managed over 30 research projects from international, national, and industry partners, with a total value of over 27 million INR and MYR 0.5 million. He is currently an Associate Editor of Frontiers in Energy Research, & Heliyon a high-impact journal in his field. His mission is to advance the knowledge and practice of energy engineering and management and to contribute to the sustainable development of the community as a whole.

About Keynote Speaker

Dr. Mohd Sapuan Salit

Head, Advanced Engineering Materials & Composites Research Centre (AEMC), Universiti Putra Malaysia (UPM), Malaysia.

Professor Mohd Sapuan Salit is Professor (Grade A) of composite materials, Department of Mechanical & Manufacturing Engineering, Universiti Putra Malaysia (UPM), and Head of Advanced Engineering Materials & Composite Research Centre, UPM. He earned BEng in Mechanical Engineering, University of Newcastle, Australia, MSc in Engineering Design, Loughborough University, UK and PhD in Material Engineering, De Montfort University, UK. He is Professional Engineer, and Fellow of the World Academy of Sciences, Society of Automotive Engineers International, International Artificial Intelligence Industry Alliance, Academy of Sciences Malaysia, International Society for Development and Sustainability, Plastic & Rubber Institute Malaysia, Malaysian Scientific Association, International Biographical Association and Institute of Material Malaysia. He is Honorary Member of Asian Polymer Association and Founding Chairman and Honorary Member of Society of Sugar Palm Development & Industry, Malaysia. He is an Honorary Adjunct Professor at National Textile University, Pakistan, and currently a visiting professor at UNITEN, Malaysia and BRIN, Indonesia . He is Editor in Chief of Journal of Natural Fibre Polymer Composites, co-editor-in-chief of Functional Composites and Structures and editorial board member of 30 journals. He has produced over 2000 publications including over 988 journal papers, 68 books, and 250 chapters in book. He has delivered 75 plenary and keynote lectures, and 150 invited lectures. He organized 33 journal special issues as guest editor, reviewed 1500 journal papers and has 8 patents. He successfully supervised 100 PhD and 75 MSc students and 16 postdoctoral researchers. His h-index is 124 with 54,317 citations (Google Scholar). He received ISESCO Science Award, Khwarizimi International Award, National Book Award, Endeavour Research Promotion Award, Citation of Excellence Award, Emerald, UK, Malaysia's Research Star Award, Publons Peer Review Award, USA, Professor of Eminence Award and Top Research Scientists' Malaysia Award. He was listed in World Top 2% Scientists, Stanford University, USA. He received SAE Subir Chowdhury Medal of Quality Leadership, International Society of Bionic Engineering Outstanding Contribution Award, China, Ikon Akademia 2022, Ministry of Higher Education Malaysia, The World Academy of Sciences (TWAS) Award in Engineering Sciences, Materials Science Leader Award by Research.com, IET Malaysia Leadership Award, William Johnson International Gold Medal, Life Time Achievement KnowTex Award and COMSTECH Best Scientific Book Award.

About Keynote Speaker

Dr. Pradeep Kumar Krishnan

Senior Lecturer, Department of Mechanical and Industrial Engineering, National University of Science and Technology (NUST) Oman.

Dr. Pradeep Kumar Krishnan is a Senior Faculty member in the Department of Mechanical and Industrial Engineering at the College of Engineering, Muscat, Sultanate of Oman. He is a Certified Manufacturing Engineer (CMfgE) accredited by the Society of Manufacturing Engineers (SME) and has over 16 years of experience in teaching and research across India, Malaysia, and Oman. Dr. Pradeep holds a Ph.D. from NIT, specializing in production processes, material characterization, and the mechanical behavior of engineering materials. His research interests span advanced manufacturing, materials science, and industrial engineering. He has received numerous accolades, including Best Faculty Awards, Young Researcher Awards, Promising Scientist Awards, and Best Research Presentation Awards. An active researcher, he has authored over 35 research papers and book chapters in high-impact national and international journals and has presented at more than 50 national and international conferences. Additionally, he has participated in over 100 seminars and webinars and attended several short-term training programs and faculty development workshops worldwide. Beyond research and publication, Dr. Pradeep is deeply committed to mentoring and supervising undergraduate and graduate students, guiding them to successful academic and professional careers.

About Keynote Speaker

Dr. Rommel Banlaoi

Chairman of the Board
Philippine Confucius Center
Philippines.

Rommel Banlaoi (pronounced as Ban La Wi), PhD is a prominent Philippine political scientist, international relations expert, and security analyst, specializing in Philippine foreign relations, counterterrorism, counterinsurgency, security and peace research as well as conflict studies in Asia including the South China Sea disputes. As the Chairman of the Philippine Institute for Peace, Violence, and Terrorism Research (PIPVTR), his work often examines the nexus between local extremist organizations, particularly the Abu Sayyaf Group and transnational terrorist networks like ISIS (Islamic State of Iraq and Syria) and Al-Qaeda. As President of the Philippine Society for International Security Studies (PSISS), his views on Philippine foreign and security relations focus on balancing Philippine engagements with China, the US and key countries in Asia and Europe. He is often quoted by media and his numerous publications are frequently cited in policy and academic discussions. In July 2022, Dr. Banlaoi was nominated and designated as a Deputy National Security Adviser with the rank of Undersecretary where he led the transition process at the National Security Council Secretariat. But he has resumed his work as an independent academic and non-government policy expert. He is currently Chairman of the Board of Advisers of the China Studies Center at the School of International Relations of New Era University, the Philippines, Non-resident research fellow at the Huayang Institute for Maritime Cooperation and Ocean Governance, member of the International Panel of Experts at the Maritime Awareness Project of the National Bureau of Asian Research (NBR), and member of the Management Board of the World Association for Chinese Studies (WACS). He served as President of the Philippine Association for Chinese Studies (PACS) and visiting professors at various universities in China, Europe and Asia. With more than 35 years of academic and think-tank experiences, Dr. Banlaoi served as a Professorial Lecturer at the International Studies Department of Miriam College, Professor of Political Science at the National Defense College of the Philippines (NDCP), Assistant Professor of International Studies at De La Salle University (DLSU), Instructor in Political Science at the University of the Philippines Los Banos (UPLB) and University Research Associate at the University of the Philippines Diliman (UPD) where he finished his BA and MA in Political Science and took his PhD in Political Science (ABD). He earned his PhD in International Relations at Jinan University in Guangzhou, China. Dr. Banlaoi received in

June 2021 the Award for Outstanding Contribution in the Promotion of Philippines-China Understanding offered by the Association of Philippines-China Understanding (APCU) and the Chinese Embassy in the Philippines. On the occasion of the 2016 World CSR (Corporate Social Responsibility) Congress Day in Mumbai, India, he received the Award for Outstanding Contribution to Humanitarian and Social Cause. Because of his involvement in peace education, terrorism research and non-violence studies, he received in 2011 the Albani Peace Prize Award for Peace Education. Thus, Dr. Banlaoi has been called ["the father of Philippine counter-terrorism research", the "leading Philippine scholar" studying radical Islam and Philippine national security, and renown Sinologist in the Philippines.

About Keynote Speaker

Dr. Pastor R. Arguelles Jr.

Director, Research and Publication Office
University of Batangas, Lipa Campus Lipa City,
Batangas, Philippines.

Dr. Pastor Arguelles JR is an internationally recognized scientist, professor, and researcher in Computer Studies with over 28 years of experience in academia. Currently serving as the Dean of the College of Computer Studies for 12 years, he has an extensive background in software development, having worked with top organizations such as Arc Angel Corporation, Accenture Philippines, and ITF Inc. He is an active speaker at international conferences and a member of several esteemed committees, including the ASEAN-India Science, Technology and Innovation Cooperation Research Project Team (2025–2027) and the Department of Science and Technology's technical evaluation panels. His research areas focus on Machine Learning, AI, and Technology Education, and he holds multiple certifications, including ISO 9001:2015 Auditor and Microsoft Technology Associate.

About Keynote Speaker

Dr. Mona Labial – Laya

University of the Immaculate Conception
Research Ethics Committee Chair
Philippines.

Dr. Mona Laya is an accomplished academic and researcher, currently serving as the Chair of the Research Ethics Committee at the University of the Immaculate Conception. She holds a PhD in Organization Studies from the University of Southeastern Philippines, as well as a Master's in Public Administration, with a focus on Organization Studies, and a Bachelor's degree in Political Science from Ateneo de Davao University. Her academic and professional contributions extend beyond the classroom, with active involvement in university service, including her role as Internal Auditor for ISO 21001:2018 and her participation in strategic planning initiatives. Dr. Laya is also a member of several research-related committees, such as the Technical Review Committee and the National Research Council of the Philippines. She is the Editor-in-Chief of ARETE, a prominent academic journal. Dr. Laya has collaborated on numerous research projects, including an ongoing, United Board-funded initiative aimed at reducing malnutrition in Davao City's undernourished barangays. Her research interests are diverse, spanning topics such as organizational studies, mental health, online learning, and work ethics. She has authored and co-authored a wide range of studies, several of which have been presented at national and international conferences. Committed to ethical research practices, Dr. Laya has attended extensive training in research ethics, contributing to her expertise in the field. She is particularly focused on applying ethical standards in academic and healthcare research, having participated in numerous national and international ethics training programs. Dr. Laya's academic rigor and dedication to research excellence have earned her recognition and a strong academic reputation, including an h-index of 2, underscoring the impact of her scholarly work.

About Session Speaker

Mr. Deepak Dasaratha Rao

Technical Product Manager
Toyota Motor North America,
Plano, TX., United States.

Deepak Dasaratha Rao is a technologist with 25 years experience in software R&D and worked for large product companies. He has experience in software R&D and developed for Embedded Systems, Smartphone platforms, Data Wireless Communication, Cloud, AI, IoT, Connected Vehicle Telematics, Automotive, Consumer Electronics, Connected Healthcare, Bio-medical, Wearable products. He has developed several first-of-its-kind innovative software products, devised strategy and reached differentiated products as a solution architect, product manager, technology leader and innovator. Experienced in designing embedded system-based software architecture, technically leading full stack development for software platforms, system software, middleware, solutions, services and applications. Deepak Rao has worked on software products for Connected Car, Smartphones, Connected Devices Platform, Wearables, Smart Home Setup Box, Robotics. He has published several international papers in journals and conferences. He has contributed as a journal reviewer for many research publications in the area of wireless communication and computer science. He is a Fellow of RSA (UK), Fellow of The Institution of Engineers (India), Fellow of The Institution of Electronics and Telecommunication Engineers (IETE) India.

About Session Speaker

Dr. Vickneswari Durairajah

Deputy Dean, Faculty of Engineering, Built Environment, and Information Technology (FEBEIT), MAHSA University Malaysia.

Ts. Vickneswari Durairajah is a distinguished academician who is currently the Deputy Dean Faculty of Engineering, Building Environment and Information Technology at MAHSA University with over 20 years of experience in education sector. She has also served as the Head of Department of Mechatronics Engineering. She also a certified Professional Technologist (PTech-MBoT) and Engineering Technologist (Eng.Tech-BEM), she has made significant contributions to engineering education and innovation. Ts. Vickneswari has vast experience in curriculum development, academic excellence, pedagogical innovation, research initiatives, accreditation, ranking audits, policy development and people management. As an active Mentor, many teams were driven to success in numerous competitions, notably guiding teams to winning awards in numerous platforms both locally and internationally. She also active in research were her area of interest in research is Biomedical devices, disable assistive device, robotics, AI, machine vision, IOT and mechatronics. She is a leader and innovator who has continuously contributing to shape the future of engineering education with her dedication and expertise.

About Session Speaker

Dr. Muhamad Firdaus Syahmi Bin Sam-on

Senior Lecturer, Department of Food Sciences,
Faculty of Science and Technology
Universiti Kebangsaan Malaysia, Selangor, Malaysia.

Muhamad Firdaus Syahmi bin Sam-On is a dedicated and accomplished Senior Lecturer specializing in Microbiology, with a profound passion for research and academic excellence. He obtained his Bachelor of Science in Microbiology in 2020 and subsequently finished a PhD in the same field from Universiti Putra Malaysia in 2023. Additionally, his expertise in farming and biotechnology has equipped him with valuable skills in pests and pathogens management, laboratory protocols, and problem-solving. Throughout his academic journey, Muhamad Firdaus Syahmi has exhibited a keen interest in exploring microbial pathogens and their potential applications in various fields, particularly in aquaculture and food safety. His doctoral research focused on evaluating the efficacy of Bacillus spp. as probiotics against pathogens causing Vibriosis and Aeromonosis, which culminated in several high- impact publications in esteemed journals like Microbial Pathogenesis and Food Bioscience. Serving as a Senior Lecturer at Universiti Kebangsaan Malaysia, Muhamad Firdaus Syahmi continues to improve his passion for teaching and research. His interdisciplinary approach and innovative methodologies have earned him recognition in the field of microbiology, and his target is to make a lasting impact on scientific knowledge and understanding. He is fluent in both Malay and English languages and always eager to learn more from his colleagues and peers in the industry. Please feel free to contact Muhamad Firdaus Syahmi Sam-on on this platform for any comments or questions related to microbiology and biotechnology.

About Session Speaker

Dr. Mazlee Mohd Noor

Faculty of Mechanical Engineering & Technology
Universiti Malaysia Perlis (UniMAP)
Malaysia.

Dr. Mazlee Mohd Noor is an Associate Professor at Faculty of Mechanical Engineering and Technology, Universiti Malaysia Perlis (UniMAP), Malaysia. He is also an Associate Research Fellow at the Centre of Excellence for Frontier Materials Research, UniMAP. He received his PhD in Materials Engineering from Universiti Malaysia Perlis in 2010. He has published over 100 papers related to heat treatment, microstructural analysis, testing, characterization and failure analysis of non-ferrous alloys, ferrous alloys, metal and ceramic matrix composites. Dr. Mazlee has given invited talks at several conferences and carried out a good deal of engineering testing and consultancy services to various public authorities and private industries in Malaysia. He has over 20 years of experience researching and developing metal matrix composite and ceramic matrix composite materials. His current research activity focusing on support catalyst of porous ceramic composites for carbon dioxide adsorption.

About Session Speaker

Dr. Tahir Sufi

Professor - Department of Tourism, School of Business & Economics
Universidad de las Américas Puebla(UDLAP) Mexico
Puebla, Mexico.

Dr. Tahir Sufi is a Full Professor at the School of Business & Economics at Universidad de las Américas Puebla (UDLAP), México. He has an extensive background in academia and the hospitality industry, with over 20 years of experience working with prestigious academic institutions and renowned hotel brands such as Le Meridian, Hilton, and Best Western. His expertise lies in Hospitality Marketing Management, Strategic Management, and Entrepreneurship. Dr Sufi holds a PhD in Business Administration and a master's in management from Sheffield Hallam University in the UK. Dr. Sufi is an accomplished author, having written the Principles of Hotel Star Ratings textbook. He also serves as a reviewer for six International Journals published by Emerald, Routledge, Taylor & Francis, and IGI International. Additionally, he serves on the Editorial Board of the Journal of Business Strategy, Finance and Management, International Journal of Innovation in Management, Economics, and Social Sciences, and is an Academic Editor of the International Journal of Innovation in Marketing Elements and the Journal of Data Analytics. Prior to his current role at UDLAP, Dr. Sufi worked as a professor and deputy director at Amity University, India, as associate dean at Lovely Professional University India, and as principal director of various colleges in India.

About Session Speaker

Dr. Mahmoud Khalifa

Professor of Political Science, Suez Canal University - Egypt
Visiting Professor, ALM College for Higher Education
United Kingdom.

Mahmoud Khalifa is a visiting professor of public policy at Almaktoum College for Higher Education in the UK and an accomplished academic in Political Science with a focus on public policy issues. In 2011, Mahmoud joined the University of Lincoln in the United Kingdom as a Visiting Fellow. During his time there, he engaged in research and academic activities related to his area of expertise. In 2013, he completed his Ph.D. degree at Suez Canal University under the supervision of Professor Hugh Bochel from the University of Lincoln (UK). In 2018, he was promoted to Associate Professor, further solidifying his academic standing. Then, in 2023, Mahmoud achieved the prestigious position of Full Professor of Political Science. Mahmoud Khalifa is an active member of several professional associations, including the Political Studies Association (PSA) and the Social Policy Association (SPA), both based in the United Kingdom. These memberships provide him with opportunities to network with other scholars, exchange ideas, and stay updated on the latest developments in his field. In recognition of his commitment to teaching and learning, Mahmoud received the Fellow of the Higher Education Academy (FHEA) status in 2018. This designation is awarded by the Higher Education Academy in the United Kingdom to individuals who demonstrate excellence in teaching and a commitment to professional development. Further cementing his teaching expertise, Mahmoud attained the Senior Fellow of the Higher Education Academy (SFHEA) status in 2022. Mahmoud Khalifa has made significant contributions to the academic community through his research. He has published 25 articles in Scopus Indexed Journals, which indicates the quality and impact of his work. These publications serve to disseminate his findings and insights to a wider audience, contributing to the advancement of knowledge in the field of Political Science. Overall, Mahmoud Khalifa's educational background, research interests, academic positions, professional memberships, student supervision, teaching accolades, and research publications collectively reflect his expertise and dedication to Political Science, particularly concerning public policy issues.

About Session Speaker

Dr. Gurmeet Singh

Vice Principal, Head to the P.G. Department of Mathematics
GSSDGS Khalsa College (Autonomous)
Patiala , Punjab, India.

Dr Gurmeet Singh completed his post graduation and Maste of Philosophy in Mathematics from renowned Punjab University, Chandigarh and earned his doctorate from the reputed Maharishi Markandeshwar University, Mullana with a special focus on the special branch of Complex Analysis known as Geometric Function Theory. He has 31 years of teaching experience. He has more than 100 research contributions to his credit, which are published in refereed and indexed journals, more than books and has delivered about 15 Keynote addresses in international conferences, some of them to mention here are Oxford University, Imperial College, London, M L Sukhadia university, Udaipur, and delivered invited talks in about 30 international conferences worldwide. He has authored books on Topology, Differential Equations, Differentiable Manifolds, Number Theory for post graduate students and many for undergraduate students. He has published three books in Germany as well. He is serving as editorial member and reviewer for numerous journals. He has organized and hosted an international conference in collaboration with IMRF. He has delivered many national and international sessions on Geometric Function Theory and Topology. He was bestowed with prestigious Pythagoras Research Award by Photon Foundation in 2015, Best paper award once by IMRF and once by IAENG, Imperial College, London in 2015, IMRF excellence award in 2016, Shrestha Acharya award by Manav Kalyan Parishad in 2018, Indo Asian Alan Turing Distinguished Mathematician Award by IMRF in 2020, Aryabhatta Global mathematician Award by Brave Souls organization, Lifetime Achievement Award by Forum for Interdisciplinary Research Methods, Outstanding Educator and Scholar Award by National Foundation for Entrepreneurship Development (NFED), Coimbatore, Tamil Nadu, AMP National Award for Excellence in Education by Association of Muslim Professionals, Aligarh in 2022, Distinguished Fellow of NFED and Outstanding Researcher Award by Maharishi Markandeshwar University, Mullana in 2024. In commemorating his laudable academic services, he has been bestowed with Lifetime Achievement Award on 5th September 2024 by National Foundation for Entrepreneurship Development (NFED), Coimbatore, Tamil Nadu in its 15th National Teachers' Day Awards. Currently, he is serving as the Vice Principal and Associate Professor & Head to the P.G. Department of Mathematics at GSSDGS Khalsa College (Autonomous), Patiala, Punjab.

About Session Speaker

Dr. Sudhir Narayan Singh

Head, (Founder), Department of Humanities & Social Sciences
Madan Mohan Malaviya University of Technology
Gorakhpur, Uttar Pradesh, India.

Dr Gurmeet Singh completed his post graduation and Maste of Philosophy in Mathematics from renowned Punjab University, Chandigarh and earned his doctorate from the reputed Maharishi Markandeshwar University, Mullana with a special focus on the special branch of Complex Analysis known as Geometric Function Theory. He has 31 years of teaching experience. He has more than 100 research contributions to his credit, which are published in refereed and indexed journals, more than books and has delivered about 15 Keynote addresses in international conferences, some of them to mention here are Oxford University, Imperial College, London, M L Sukhadia university, Udaipur, and delivered invited talks in about 30 international conferences worldwide. He has authored books on Topology, Differential Equations, Differentiable Manifolds, Number Theory for post graduate students and many for undergraduate students. He has published three books in Germany as well. He is serving as editorial member and reviewer for numerous journals. He has organized and hosted an international conference in collaboration with IMRF. He has delivered many national and international sessions on Geometric Function Theory and Topology. He was bestowed with prestigious Pythagoras Research Award by Photon Foundation in 2015, Best paper award once by IMRF and once by IAENG, Imperial College, London in 2015, IMRF excellence award in 2016, Shrestha Acharya award by Manav Kalyan Parishad in 2018, Indo Asian Alan Turing Distinguished Mathematician Award by IMRF in 2020, Aryabhatta Global mathematician Award by Brave Souls organization, Lifetime Achievement Award by Forum for Interdisciplinary Research Methods, Outstanding Educator and Scholar Award by National Foundation for Entrepreneurship Development (NFED), Coimbatore, Tamil Nadu, AMP National Award for Excellence in Education by Association of Muslim Professionals, Aligarh in 2022, Distinguished Fellow of NFED and Outstanding Researcher Award by Maharishi Markandeshwar University, Mullana in 2024. In commemorating his laudable academic services, he has been bestowed with Lifetime Achievement Award on 5th September 2024 by National Foundation for Entrepreneurship Development (NFED), Coimbatore, Tamil Nadu in its 15th National Teachers' Day Awards. Currently, he is serving as the Vice Principal and Associate Professor & Head to the P.G. Department of Mathematics at GSSDGS Khalsa College (Autonomous), Patiala, Punjab.

About Session Speaker

Dr. Shanthi Mahesh

Professor & HOD- Information Science & Engineering,
EPCET, Bangalore, India.

Presently working as Professor and Head-Information Science and Engineering, EPCET, Bangalore. Offering 27 years of experience in teaching and interaction across various industries; Ph.D –Computer Science & Engineering. Specialization in Bioinformatics and Medical Image Processing. Published More than 7 Books for Academic fields. Published more than 27 International Journals. Research fund of 10L(from VGST & AICTE). Conducted and participated in more than 80 +Workshops and Seminars. Participated in various International and National Conferences. Got best paper award in international conference, Gujarat. 2012, best researcher award 2022. Trained for NAAC binary System

About Session Speaker

Dr. Gladiola A. Eje-Dimaculangan

Director, Counseling and Psychological Wellness Center
University of Batangas, Philippines

Dr. Gladiola A. Eje-Dimaculangan holds credentials as a Registered Psychologist, Registered Counselor, a Licensed Teacher, and a Certified Mental Health First Responder. She currently assumes the role of Director at the Counseling and Psychological Wellness Center at the University of Batangas and holds the position of Graduate School Program Chair in Psychology and Counseling. In addition to her administrative responsibilities, Dr. Glad maintains a strong commitment to clinical practice. She actively collaborates with Lighter Loads Wellness and Consultancy, where she serves as a part-time counselor with expertise in addressing emotional concerns and trauma, particularly in children. She also does TV and Radio appearances as mental health expert like GMA-7, TeleRadyo Serbisyo Totoo showcasing her commitment to community reslilence and psychological support. Dr. Gladi is actively engaged in leadership roles within various counseling-related organizations. Her journey in this realm began when she served as the Regional Secretary of the Integrated Professional Counselors Association of the Philippines (IPCAP) - Region 4A from 2015 to 2017. In 2018, she expanded her involvement by joining IPCAP's National Governing Council, initially as a Board Member and later taking on the role of Officer for Professional Development. Furthermore, she made significant contributions to the field by becoming the inaugural Provincial President of the Philippine Guidance Counseling Association (PGCA) - Batangas Chapter in 2018. Her dedication to professional development extended into her role as part of PGCA National's Committee in Corporate Social Responsibility in 2020.

Presently, she continues to make her mark in the field as an Officer for External Affairs within the National Governing Council of IPCAP. She also holds the position of Ex-Officio in PGCA Batangas Chapter. Her commitment to the mental health field is further demonstrated by her active lifetime membership in the Philippine Mental Health Association and her involvement in other mental health organizations, such as the Philippine Association for Child and Play Therapy. Dr. Glad has also demonstrated her innovative spirit by initiating several impactful programs. She spearheaded Project GIYA, a commendable initiative that provides free capability training for non-licensed counseling practitioners working in public schools, thereby enhancing the quality of counseling services available to students. Dr. Gladi also initiated I-GUIDE, a program that extends financial assistance to Persons with

Disabilities (PWD) and Indigenous Peoples who aspire to pursue their education at the University of Batangas. This program enables underserved individuals to access educational opportunities. She was also instrumental in the establishment of the Parangal Pamamatnubay at Gabay ng Batangan, a prestigious provincial-level award program that recognizes and honors Registered Guidance Counselors and institutions in Batangas for their significant contributions in the field of guidance and counseling. These innovative programs underscore Dr. Glad's dedication to promoting mental health, education, and professional development in her community.

Dr. Gladi has been honored with various prestigious awards and recognitions, highlighting her remarkable contributions and leadership in the field. The Philippine Guidance Counseling Association - Batangas Chapter recognized her outstanding leadership and dedicated service to the organization, underscoring her commitment to the field of guidance and counseling. Dr. Gladi also received a prestigious accolade as Best Visionary Leader of the Year - Perficio Award 2021 from the DHS Foundation in New Delhi, India, in acknowledgment of her visionary leadership, demonstrating her remarkable contributions on a global scale. In the mid of Dr. Gladi's love to her demanding professional life as a leader, counselor, lecturer, graduate school professor, mental health advocate, and her most cherished roles as a wife to Oliver and a mother to Gia, she never forgets to walk the talk when she says:"You cannot pour from an empty cup" She makes sure her soul is filled with a daily dose of positivity through spending quality time with God and herself. She indulges her free time doing arts, meditating, cooking for family, and reading books. She enjoys happy and meaningful conversations with friends and family just like how she loves tea and the sea.

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Panel Discussion Speakers

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Abstract's Index

Strengthening Meaningful Participation: Deliberative Democracy in Lawmaking

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University Of Sebelas Maret, Surakarta, Indonesia
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Abstract:

Constitutional Court Decision Number 91/PUU-XVIII/2020 concerning the formal testing of Law Number 11 of 2020 concerning Job Creation, brings an expansion of the meaning of public participation. The decision states that public participation in the formation of laws needs to be carried out in a meaningful manner (meaningful participation). The goal is to create real community participation and involvement, which so far has only been procedural. Community participation is of course intended so that ideas for the formation of laws do not always have to emerge from the political elite alone. Doctrinal legal research method with secondary data base. Combining the methods of deliberative democracy and meaningful participation in the formation of the Act is needed so that public discourse is created: everything that concerns the lives of many people (the Act) is not only the domain of the government (DPR, DPD and President) but also involves the community with equal position. One of the innovations that must be done is the maximum use of Information Technology. Thus, the Act that is formed is not only procedurally valid but also substantively correct. So that the law that is born is a law that has high value and validity which will ultimately provide benefits not only in the formation of the law but further as a means to lead to the development of a national legal system.

Keywords:

Meaningful Participation, Deliberative Democracy, Lawmaking

Exploring the Use of Technology in Teaching Vocabulary in Junior High Schools

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Sari Hidayati
Universitas Negeri Yogyakarta, Depok, Indonesia

Abstract:

This study explores the use of technology in language teaching in junior high schools, emphasizing its effects on student involvement and academic achievement. The study was carried out at two schools located in Kecamatan Gunuang Omeh, with four teachers participating. Data were gathered by classroom observations and interviews to comprehend the implementation and results of technology-enhanced educational methods. The results indicated that the integration of technology markedly enhanced student engagement and academic performance. Interactive platforms such as Wordwall and Kahoot! offered stimulating activities and competitive games that encouraged students to engage actively in vocabulary development. The Quizlet flashcard technique also assisted students by improving their capacity to memorize vocabulary efficiently. Teachers exhibited creative approaches in incorporating these technologies into their pedagogical practices, resulting in a more engaging and effective vocabulary acquisition experience. This study highlights the transformative capacity of technology in vocabulary training. Nonetheless, it highlights the importance for sufficient infrastructural support and extensive teacher training for successfully using the benefits of technology in educational environments. These processes are crucial for ensuring the efficient utilization of technology tools to improve the quality of teaching and learning in educational settings.

Keywords:

Junior High School, Technology, Vocabulary

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AI Innovative Approaches in Personalized Marketing Strategies through Prompt Engineering

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Abstract:

This paper explores the revolutionary impact of Artificial Intelligence (AI) and Machine Learning (ML) on digital marketing, focusing on the critical role of prompt engineering. By enabling personalized marketing strategies, prompt engineering enhances customer engagement, segmentation, and marketing automation. It empowers businesses to fine-tune their approaches using technologies such as voice interfaces, augmented reality, and SEO optimization, leading to proactive customer acquisition. The study emphasizes the emerging potential of combining neuromarketing with AI prompt engineering to detect customers' such as physically and psychological states in real-time, providing hyper-personalized recommendations based on past consumption patterns and health data. This integration is seen as pivotal in reshaping digital marketing, offering businesses the ability to adapt dynamically to customer needs.

Dynamic content recommendation systems are highlighted as pivotal in reshaping future marketing strategies by allowing real-time adaptation to customer needs. The paper concludes that prompt engineering is an invaluable tool, still in its nascent stage, but with the potential to transform digital marketing significantly. Those who leverage this technology early are poised to lead in the forthcoming marketing revolution. The integration of these technologies is portrayed as the key to maximizing the utility of AI models, offering a glimpse into a future where digital marketing is profoundly personalized and efficient.

Keywords:

Artificial Intelligence, Prompt Engineering, Digital Marketing, Personalized Marketing, Machine Learning, Marketing Automation

Enhanced IoT System Security Through Artificial Intelligence

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Multimedia University Malaysia

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Multimedia University Malaysia

Abstract:

Industries were revolutionized by the Internet of Things (IoT) with seamless connectivity between devices but introduced significant security threats such as unauthorized access and data breaches. As IoT networks evolve and grow, traditional security measures fail to keep pace, highlighting the need for advanced solutions. Integrating Artificial Intelligence (AI) into IoT systems has emerged as a potential solution to improve security by offering adaptive, real-time threat detection, anomaly identification, and automatic countermeasures against cyber-attacks. First such approaches as machine learning and deep learning are working with huge amounts of data and spotting abnormal patterns and behaviours that quickly allows to identify suspicious threats. Hence, AI-based systems can be useful for improving Intrusion Detection Systems (IDS), optimizing security protocols, better protection against unauthorized access, and help minimize the risk of cyber-attacks. What is more, AI helps with predictive analytics, which enables IoT networks to predict and solve risks before they become real. With AI integration, IoT systems can even implement self-healing mechanisms to automatically recover from attacks. However, challenges such as computational power and data privacy, AI uses significantly improve IoT security offering a more flexible, undetected, and much more durable defence against impending threats. Integrating AI with IoT enables organizations to secure and maintain the safety and reliability of their network of devices within an ever more complex cyber threat landscape.

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The Effectiveness of Community Counselling in Helping Clients

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Abstract:

Community counselling is an intervention used to assist communities in overcoming barriers, so that barriers are resolved, this intervention promotes an understanding of multi-cultural and social justice in society. In helping clients, counsellors must have good knowledge, skills, and attitudes, this is very important because community counsellors are the ones who provide help services to clients so they must really be competent. The purpose of this research is to see the effectiveness of community counselling in helping clients. This research method uses the Systematic Literature Review (SLR) method using the PRISMA flow (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) and uses the PICO (Population, Intervention, Comparison/Control, Outcome) method to extract data from the results of the studies reviewed. The study population was 6 journals that fulfilled the criteria. The results of this study indicate that community counselling is effective in helping clients, especially oppressed or disadvantaged clients, although the level of effectiveness of each study varies. Therefore, community counselling is recommended to be used to help clients. This study has limited resources and specific guidelines for the implementation of community counselling, so this can be a recommendation for future research.

Keywords:

Community Counselling, Helping Clients, Counsellor, Helping Professions

What Kind(s) of Activity Motivates Gen-Z Students Best in E-Learning?

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Abstract:

The existence of e-learning has raised huge opportunities that anyone can learn anything, anywhere, anytime (Surjono, 2022). Green and Gilbert (1995) in Alexander (2001) even mention that this kind of environment of online activities boosts productivity among those whose learning process is still in need. Therefore, the output of a person finishing their learning through e-learning depends on what activity they engage with. Gen-Z is known for those who were born between mid-1990 to early 2000. In their research, Persada et al. (2020) mentions that Gen-Z is identified as the generation of Mobile and App Native as they were born where internet has already been mature. They are also open to things including educational ones such as e-learning. Eventhough many research mention how e-learning leads to students' understanding, there is no particular research that discusses specific activities that interest and foster gen-Z in studying using e-learning. This research showed that quiz becomes the most exciting activity for gen-Z students, while material delivery through pdf files reveals to be the least motivating one.

Keywords:

e-learning, Online Activities, Gen-Z students

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Gendered Experiences of Trauma and the Role of Nature in Post-victimology in The Island of Missing Trees

Dr. Mafruha Ferdous
American International University, Bangladesh

Abstract:

Socio-political and religious turmoil generate divergent experiences for men and women. Civil war and ethnic conflicts are among many other chaotic situations that create corporeal and spiritual distress to the residents of any community. In *The Island of Missing Trees*, Elif Shafak exposes the consequences of the civil war between Greek and Turkish Cypriots that took place during 1960 to 1970's. The violence of the war and the disappointment caused by such incidents had significant effects on human and natural world. Like any others social and political emergency the sufferings of women in the novel are more strenuous than the sufferings of men. In the novel Shafak speaks not only for human but also for nature. In her presentation, natural world and its degrading status due to human made anarchy are vividly portrayed. Fig tree, a representation of nature and femininity becomes an instrument to highlight women's sufferings during war. Besides presenting their sufferings, Shafak does not hesitate to mention their resilience in such chaotic situation. The ability of the fig tree to survive the war and to adjust in a new environment as well as the survival of the female characters in the novel resonates with Vandana Shiva's concept of post victimology. The term asserts the possibility and chances of nature to survive war and to adjust with a new situation. This research contributes to contemporary literary studies by foregrounding the interplay between gender, trauma, and environmental narratives in fostering pathways toward collective resilience.

Keywords:

Civil War, Ethnic Conflict, 'Fig Tree', Post-victimology, Gendered Experiences

Strengthening Emotional Intelligence (EI) of Engineering Students thru Artificial Intelligence (AI) using RON Educational Approach

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Research Coordinator, College of Engineering, University of Luzon, Dagupan, Philippines

Abstract:

Education 5.0 is on a fast pace run these post-Covid years where educators must adapt and enhance their respective curriculum design thru incorporation of chatbots, virtual tutors & educational assistants which is all driven by Artificial Intelligence (AI).

Traditional method of a live lecture in a classroom setting was flipped to a pre-recorded lecture uploaded thru Google Classroom with handouts of pdf lectures and discussion, then students per individual can ask a chatbot with inquiries that are not fully understood which enhance an adaptive learning experience. This AI can generate quiz exclusively for the student and assessment of result is submitted.

After learning on their own pace, these students will interact in a live classroom setting where their individual Emotional Intelligence is monitored & recorded thru a set of questionnaires and checklist by grouping each other and tackle an engineering design problem or engineering project related to lecture previously viewed online that ensures a cooperative learning environment.

Data collected from 210 students with 3 semestral period indicates that emotional intelligence of most student varied from 53 to 72% increase with respect to their initial assessment. This data indicates that AI can augment one of the most seek out factor of our engineering graduate in successful industries & companies here and abroad.

Keywords:

Education 5.0, Emotional Intelligence, Artificial Intelligence, Flipped Classroom, Cooperative Learning

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Comparative Study on Social Determinants for Health

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Abstract:

The article focuses on comparing some social determinants of health in Northeast Asian Countries to find out similarities and differences in the indicators of the countries. Social determinants of health are a crucial and more important than health care and contribution of health system for health of the population.

The study is comparative and a quantitative study with multi-parameters on social determinants of health in Northern Asian countries. Data of the study is extracted from the report on Human Development Index 2020–2021, WHO, World Health Statistics 2022 and other available internationally recognized secondary data base.

The study consists of comparative analysis of social determinants of health, comparative analysis of environmental determinants of health and comparative analysis of health indicators in the countries of Northeast Asian Countries.

Study concludes that although the countries of the region belong to very high and high human development indexed countries there are big differences in GDP per capita and poverty related indicators that are signs of inequality and disparities in social determinants of health in the region. Environmental determinants in all countries have been worsening from 2020 to 2022, air pollution and climate change indices are big environmental determinants of health in the region that negatively result in health status of the population.

Keywords:

Social Determinants of Health, Environmental Determinants of Health and Health Indicators

Exploring The Experiences of Elementary Teachers in Dealing with Bullied Students

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UM Tagum College, Philippines
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UM Tagum College, Philippines

Abstract:

This phenomenological study explored elementary teachers' experiences dealing with bullied students, which the researchers conducted in selected schools in Tagum City. The study used in-depth interviews and focus group discussions with ten teachers as participants, selected through purposive sampling. The thematic analysis identified three major themes in teachers' experiences: understanding the background and environment of students, managing the emotional and psychological impact on teachers, and strategies for handling persistent bullying cases. Teachers highlighted ways of supporting bullied students, such as setting up rules against bullying, addressing and preventing bullying, attending to students' needs, and ensuring student monitoring. Finally, their insights from this study emphasized the importance of dealing with bullied students. They showed three major themes: bullying should be approached holistically, interventions should be systematic, and bullying can be addressed through value-based interventions. These findings provide valuable contributions to improving educational practices and policies to address bullying in elementary schools effectively.

Keywords:

Elementary Education, Bullying, Teacher Experiences, Phenomenology, Philippines

ISBN: 978-81-976209-7-3

Automated Remediation Strategies for Cloud-Native Security Misconfigurations

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Abstract:

Cloud-native environments provide exceptional scalability and flexibility; however, misconfigurations in security pose a significant challenge, resulting in unauthorized access, data breaches, and violations of compliance. Conventional security methods, which depend on manual audits and static rule-based detection, are often unable to keep up with the evolving nature of cloud infrastructures.

This document introduces an automated remediation framework intended to identify, prioritize, and rectify misconfigurations across AWS, Azure, and Google Cloud. By incorporating policy-as-code enforcement, machine learning-driven anomaly detection, and infrastructure-as-code (IaC) automation, the framework facilitates proactive management of security with minimal human oversight. Utilizing tools such as Ansible, Terraform, and cloud-native security APIs, it guarantees continuous monitoring, risk evaluation, and policy-focused remediation.

This study emphasizes the necessity for proactive and automated security enforcement in cloud-native environments, thereby decreasing reliance on reactive security mechanisms. The framework strengthens cloud security by reducing exposure windows, implementing least-privilege access, and dynamically responding to emerging threats. Future research will investigate predictive analytics, real-time compliance enforcement, and blockchain-based integrity validation to further bolster automated cloud security initiatives.

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Understanding Coastal Management Dynamics in Tagkawayan, Quezon Philippines: A Triangulation Approach

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Abstract:

This study examines coastal management in Tagkawayan, Philippines through CLEMENTE (Coastal Local Knowledge, Management Efforts, and Needs Triangulation). Recognizing the interconnectedness of society and ecology, CLEMENTE integrates local ecological knowledge (LEK) from fishers with the Local Government Unit's (LGU) management plans. This approach prioritizes understanding human-environment interactions and incorporates stakeholder perspectives for a more inclusive strategy. CLEMENTE utilizes triangulation, a method using multiple data collection techniques to enhance findings' validity and reliability. The study offers a comprehensive analysis of how local knowledge, best practices, and LGU initiatives interact in shaping Tagkawayan's coastal management. The study identified both strengths and weaknesses. While some LGU initiatives aligned with LEK, highlighting successful practices, discrepancies pointed to areas for improvement. Based on these findings, the study recommends, increased collaboration between fishers and the LGU to bridge knowledge gaps and incorporating valuable LEK insights into management practices. These recommendations can strengthen Tagkawayan's coastal resource management and promote long-term sustainability. This multifaceted CLEMENTE framework transcends limitations of singular data collection methods, offering a novel approach to analyze coastal management effectiveness. Which can be applied in other fishing communities to assess alignment between existing efforts and stakeholders' experiences, ultimately promoting more sustainable coastal management practices.

Keywords:

Coastal Management, Local Ecological Knowledge (LEK), Triangulation Method, Stakeholder Engagement, Sustainable Fisheries

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The Role of Ecotourism in Sustainable Development: A Systematic Review of Literature

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Abstract:

Ecotourism has become an important aspect for promoting sustainable development by balancing environmental conservation, economic growth, and cultural preservation. The article reviews and synthesises existing research on the role of ecotourism in sustainability, focusing on its ecological, socioeconomic, and cultural impacts. The findings suggest that ecotourism can play a significant role in protecting biodiversity, empowering indigenous communities, and preserving cultural heritage. However, its effectiveness as a sustainable development strategy depends on implementing strong management practices, fairly distributing benefits, and actively involving local communities. While ecotourism holds great potential, it also faces challenges such as environmental damage from poorly regulated tourism, economic inequality among stakeholders, and the commercialization of cultural traditions. This paper also offers policy recommendations to enhance the positive impacts of ecotourism and address its negative effects. Ultimately, the study highlights the need to take a holistic approach to ecotourism and incorporate it into broader sustainable development frameworks to ensure long-term environmental, economic, and cultural sustainability.

Keywords:

Ecotourism, Sustainable Development, Environmental Conservation, Biodiversity Preservation, Community Empowerment, Cultural Heritage, Socioeconomic Impact, Tourism Management, Environmental Awareness, Cultural Preservation, Responsible Tourism, Sustainable Tourism Practices

A Unified Deep Learning Architecture for Autonomous Rice Pathology Screening

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Abstract:

Deep learning (DL) and machine learning (ML) are revolutionizing areas that involve financial services, health care, and autonomous vehicles by offering novel solutions for complicated challenges. These strategies use effective techniques to evaluate vast amounts of data, delivering features such as adaptability, efficiency, and the effectiveness of costs. Fortunately, difficulties remain when implementing these theories in real-world situations, ensuring computation effectiveness and addressing moral questions like impartiality and data safety. This investigation concentrates on designing adaptable and successful deep-learning models for overcoming such constraints. Detailed strength projections might be achieved by deploying data on the composition of the material, finishing operations, and the surrounding environment, additionally upgrading methods for image processing for occupations like separating features and identifying objects. This research aims to enhance the precision of forecasting, streamline the usage of resources, and integrate ethical concerns into building models. These results assist in establishing sustainable and legitimate deep-learning strategies for a range of real-world applications.

Keywords:

Computational Efficiency, Data Safety, Forecasting Precision, Resource Optimization

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QuickHire Mobile Application Development: Mobile App Based Solution to Facilitate Part-time Jobs in Indonesia

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Abstract:

Part-time jobs are increasingly in demand in Indonesia, especially by students and workers who need flexibility. However, the search for part-time jobs still faces obstacles such as the lack of specific and efficient platforms. This research aims to develop and analyze the QuickHire mobile application, a technology-based solution that connects part-time job seekers with employers quickly and effectively. Using the Waterfall development method, this study follows stages including needs analysis, system design, implementation, testing, and evaluation. QuickHire offers key features such as job search based on user preferences, a vacancy matching system, and direct communication between workers and employers. User Acceptance Testing (UAT) is conducted to assess functionality and user experience, with results indicating that QuickHire enhances efficiency in the part-time job recruitment process and provides a better user experience compared to conventional job search methods. With its developed features, this application is expected to become an innovative platform in Indonesia's flexible workforce ecosystem.

Keywords:

Mobile Apps, Part Time Jobs, Digital Recruitment, Job Matching, User Experience

Advancing a High-Quality Medical Equipment Network for Sustainable Healthcare in Thailand's Southern Border Provinces

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Abstract:

This study aims to: (1) develop a quality medical equipment network for the three southern border provinces of Thailand, (2) evaluate the impact of implementing this network based on the active participation of medical equipment personnel, and (3) assess the alignment of operations with the United Nations Sustainable Development Goals (SDGs). The study targeted personnel from 33 hospitals under the Ministry of Public Health in the three southern border provinces, selected through purposive sampling. Research instruments included the quality medical equipment network system, a practical training assessment form, and a satisfaction questionnaire. The findings indicate that: (1) The developed network follows a five-level participatory framework: (i) Inform-establishing a hospital-based network of medical equipment personnel to facilitate communication and knowledge sharing; (ii) Consult-gathering input from medical personnel and relevant stakeholders to ensure inclusivity and responsiveness to local needs; (iii) Involve-signing academic cooperation agreements to formalize collaborative efforts; (iv) Collaborate-creating strategic partnerships for medical equipment maintenance and calibration services to enhance service quality and efficiency; and (v) Empower-providing specialized training and certification programs to strengthen personnel expertise and develop a sustainable workforce. (2) The implementation of the network yielded remarkable outcomes. A total of 735 personnel received certification, surpassing the initial target of 4 by 18,375%. Additionally, two accredited medical equipment laboratories were established, exceeding the original goal of one by 200%. Furthermore, 5,148 medical devices across four categories were successfully calibrated, significantly surpassing the initial target of 100 devices from two categories by 200%. These results highlight the effectiveness of a participatory approach in strengthening technical capacity and service readiness. (3) The system demonstrated alignment with seven SDGs (3, 4, 8, 9, 12, 15, and 17), exceeding the initial objective of aligning with only SDG 3 by 700%.

Keywords:

Medical equipment, Calibration (CAL), SDGs

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The Smartphone Generation: How Digital Devices Shape Behaviour and Social Interactions

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Abstract:

This research investigates the impact of mobile and digital device usage on the behavioural development of adolescents, with a focus on their social, emotional, academic, home, and health adjustments. The study compares adolescent adjustment between two groups: students who frequently use mobile and digital devices and those who do not. Results indicate significant differences in home, emotional, and social adjustment, with adolescents who frequently use digital devices exhibiting poorer adjustment in these areas. Specifically, both boys and girls show substantial challenges in emotional and social domains, with a high percentage in the Unsatisfactory category for these types of adjustment. However, academic and health adjustment did not show significant differences between the two groups. Statistical analysis, including independent samples t-tests and Mann-Whitney tests, confirms that mobile device usage is strongly associated with emotional and social difficulties, whereas academic and health adjustments appear unaffected by device usage. These findings highlight the need for targeted interventions that address the emotional and social challenges faced by adolescents in the digital age, particularly focusing on mitigating the negative effects of excessive digital device use on personal and social development.

Keywords:

Mobile, Mobile Device Usage, Digital Devices, Adolescent Behavioural Development, Social Adjustment, Health Adjustment, Home Adjustment, Digital Age, Emotional Difficulties, Technology And Behaviour, Screen Time, Psychological Adjustment

Recent Advancements and Challenges on Kinesthetic Force Feedback of Haptic Gloves

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Abstract:

The rise of virtual reality has prompted the integration of haptic feedback technology as an essential component to enhance user interaction within virtual environments. One of the most common methods to incorporate haptic sensations into virtual reality is through the use of haptic gloves. Haptic gloves enable users to engage and interact with virtual objects through tactile and kinesthetic feedback. This paper provides an overview of existing haptic gloves and their various approaches to kinesthetic force feedback. This study also emphasizes the difficulties that arise in the development and application of haptic feedback systems including weight and mechanical complexity. Additionally, this paper examines the classification of the haptic systems according to their advancement and approach to user interaction. Applications and advantages of the use of haptic gloves in different realms such as medical simulations, training, and gaming are highlighted as well. Proposed future directions are emphasized on the development of lightweight, adaptable systems that can address the specific requirements of individual users while combining multiple sensory modalities to enhance the immersive experience. This study seeks to advance the ongoing discourse regarding the evolution of kinesthetic feedback technologies in haptic gloves by identifying and addressing challenges that are currently being faced.

Keywords:

Mobile, Mobile Device Usage, Digital Devices, Adolescent Behavioural Development, Social Adjustment, Health Adjustment, Home Adjustment, Digital Age, Emotional Difficulties, Technology And Behaviour, Screen Time, Psychological Adjustment

ISBN: 978-81-976209-7-3

An Analysis of Figurative Language in the Opera The Mikado by Gilbert and Sullivan

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Abstract:

This study aims to analyse the types of figurative language used in the lyrics of The Mikado's songs and determine the most frequently used forms. The data includes the lyrics of 19 selected songs from The Mikado, all of which contain figurative language. The findings revealed that 12 types of figurative language were found in the songs of The Mikado, including personification, metaphor, onomatopoeia, allusion, simile, apostrophe, metonymy, synecdoche, hyperbole, irony, oxymoron, and rhetorical questions. Each type of figurative language is categorized into three main groups. The first group is Comparison, which consists of simile, metaphor, metonymy, and synecdoche. The second group is Exaggeration and Contradiction, which includes hyperbole, irony, and oxymoron. The third group is Sound, Address, and Reference, which contains personification, onomatopoeia, allusion, apostrophe, and rhetorical questions. The results show that personification (22.5%), metaphor (17.5%), onomatopoeia (15%), and allusion (10%) are the four most frequently used types of figurative language in the songs. The findings suggest that the authors used figurative language in The Mikado's songs to enhance the beauty of the lyrics, express ideas more gently and concisely, and enrich the audience's experience.

Keywords:

Figurative Language, Lyrics, Opera, The Mikado, Gillbert And Sullivan

Harnessing Artificial Intelligence for Sustainable Development: Optimizing Energy, Resources, and Climate Solutions

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Abstract:

The rapid advancements in Artificial Intelligence (AI) and Machine Learning (ML) have significantly impacted sustainability efforts by optimizing energy consumption, improving resource allocation, and enhancing climate predictions. This paper explores the role of AI and ML in driving sustainable practices across various industries, examining their applications, benefits, and limitations. By integrating AI-driven analytics, predictive modeling, and automated decision-making, organizations can enhance sustainability initiatives and reduce environmental footprints. The research also investigates the ethical considerations and challenges associated with AI-driven sustainability, including data accessibility, algorithmic biases, and computational resource demands. Through case studies, theoretical frameworks, and empirical analysis, this study provides a comprehensive evaluation of how AI and ML contribute to long-term environmental conservation and economic viability. The findings emphasize the importance of interdisciplinary collaboration, policy support, and responsible AI deployment in achieving sustainable development goals.

Keywords:

Artificial Intelligence, Machine Learning, Sustainability, Energy Optimization, Climate Prediction, Resource Management, Environmental Conservation, AI Ethics, Sustainable Development, Predictive Analytics

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Nuclear-Powered shipping: A Pathway to Zero-Emission Maritime Transport

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Abstract:

Maritime transportation, responsible for over 80% of global freight movement, is a major source of environmental emissions, highlighting the urgent need for sustainable solutions to protect marine ecosystems and reduce pollution. With tightening regulations, growing environmental concerns, and a push for greater resource efficiency, the maritime industry is increasingly exploring alternative fuels such as hydrogen, LPG, ammonia, LNG, biofuels, and nuclear energy. Among these, nuclear power emerges as a particularly compelling option for reducing carbon emissions in line with the International Maritime Organization's (IMO) decarbonization and fuel efficiency targets.

Although nuclear propulsion has been successfully implemented in icebreakers, naval fleets, and specialized supply vessels, its adoption in commercial shipping remains limited, primarily due to regulatory and operational challenges. This research delves into the feasibility of nuclear-powered cargo ships by analyzing reactor technologies, energy generation methods, and the critical safety protocols required for their deployment. Collaborative efforts between regulatory bodies, pilot projects, and industry stakeholders will be essential in refining safety standards and ensuring compliance with international regulations. Additionally, public perception remains a key factor, emphasizing the need for transparent environmental impact assessments and effective communication to foster trust and align nuclear shipping with global sustainability objectives.

Despite existing hurdles, nuclear propulsion presents a transformative opportunity for innovation and international cooperation. Addressing regulatory and societal concerns through cohesive policies and public engagement could pave the way for nuclear power to play a pivotal role in the maritime sector's transition toward a cleaner, more efficient future. Its successful integration would not only support low-carbon shipping but also contribute significantly to the broader global energy transition.

Keywords:

Nuclear Energy, Nuclear Powered-Vessel, Sustainable Shipping

Acknowledgement: This work was supported by Korea Evaluation Institute of Industrial Technology (KEIT) grant funded by the Ministry of Trade, Industry and Energy (MOTIE) (RS-2023-00285272, Development and demonstration of ammonia fueled engine for medium/large sized vessels; RS-2024-00458498, Development of Core Regasification and Reforming Units for Ammonia/Hydrogen Supply on FSRU; and RS-2024-00434535, Development of LPG Diaphragm Pump System).

An Analysis on Direct Ammonia SOFC System for Maritime Application

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Abstract:

The maritime industry is increasingly adopting innovative integrated systems that leverage green energy alternatives to align with GHG reduction and decarbonization strategies. In this context, a novel integrated system combining solid oxide fuel cells (SOFC), a gas turbine (GT), the steam Rankine cycle (SRC), the Kalina cycle (KC), and the organic Rankine cycle (ORC) is proposed, focusing on the mechanical efficiency of direct ammonia fuel cells.

The research methodology involves developing several mathematical models based on the first and second laws of thermodynamics to evaluate energy and exergy performance. The analysis includes quantifying exergy destruction and losses across different subsystems. As a result, the system's energy and exergy efficiency improved to 60.4% and 57.3%, respectively.

Additionally, the waste heat recovery process is designed to produce hot water, which can fully meet the needs of seafarers onboard. The system operates by supplying ammonia to the solid oxide fuel cell (SOFC) before utilizing a regenerative heat exchanger to recover heat. Subsequently, the steam Rankine cycle (SRC) absorbs waste heat from the SOFC and transfers it back to the working fluids. The integration of waste heat from an SOFC-GT hybrid system significantly enhances thermal efficiency, while the combined operation of the gas turbine (GT), Rankine cycle (RC), and Kalina cycle (KC) generates additional power for onboard applications.

In addition, the ASPEN-HYSYS V12.1 is used to simulate the fuel direction as well as calculate cell voltage, and fuel and air utilization factors. Then, modeling verification corresponds to ensuring the estimated values and collected ones are consistent. To sum up, the introduced multigeneration energy system is an ideal solution for alternative energy selection, by using this environmentally decarbonized system, the energy and exergy efficiency have been improved significantly. The most important contribution of the research is drafting out R152a as the most suitable working fluid for ORC after comparing five selected factors R134a, R600, R601, R152a, and R124. This plays an important role in optimizing the operation of ORC and boosting both energy and exergy values of the integrated system.

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Enhancing Patient Access to Healthcare: A Study on Chatbot Integration with Doctor Appointment Systems

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Abstract:

Technology play such an important role in enhancement of healthcare sector and improving communications between patients and healthcare providers. In this modern world patient faces large number of challenges while accessing medical services, including difficulty finding healthcare providers, scheduling appointments and managing prescription. System while is currently in process often lack integration, requiring patients to navigate across multiple platforms for different services. This system creates dissatisfaction and frustration among the patients. Many current solutions fail to provide real-time updates, comprehensive provider directories, or easy navigation, which are essential for user satisfaction and accessibility websites intends to fill these gaps by integrating features such as searchable directory of healthcare professionals, categorized consultation packages, user reviews, and health tips. This platform aims to solve the issue of present health care system by offering a one-stop solution where user can find doctor, book lab tests and purchase medicines and a chatbot is also integrated with the doctor appointment system which help is many medical issues to patients. Keeping these problems in mind our website will tack care of all the medical needs in one place. The Development of the website comes with chatbots which help you know about your health better then comes the most important appointment scheduling that allows patients to book appointments and to modify them according to their needs and doctor availability. The motivation for addressing this problem stems from the need for a more accessible, integrated, and user-friendly healthcare solution that meets the demands of modern patients.

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Vehicle Detection Based on Faster R-CNN

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Abstract:

Vehicle detection is indispensable in the advanced uses like autonomous navigation, intelligent traffic management, and smart city initiatives, enhancing transportation safety and efficiency.The increasing demand for accurate and real-time vehicle detection has led to the adoption of advanced deep learning techniques. This paper introduces a robust and efficient vehicle detection approach using Faster Region-based Convolutional Neural Networks (Faster R-CNN), a state-of-the-art deep learning model(DL) formulated for object detection tasks. Faster R-CNN enhances detection accuracy by integrating the Region Proposal Network's (RPN) with a Fast R-CNN detector within a unified framework. Unlike normally used methods that dependent on external region proposal techniques, this approach eliminates such dependencies, streamlining the detection process. The RPN efficiently generates high-quality region proposals, enabling precise localization of vehicles in images and videos. This integration significantly improves both detection speed and accuracy, making it suitable for real-time applications. Additionally, Faster R-CNN leverages deep convolutional networks to extract rich feature representations, ensuring robust performance even in complex environments. The proposed method is highly effective for various applications, including autonomous driving, traffic surveillance, and intelligent transportation systems. By combining efficiency, accuracy, and scalability, this approach contribute to the AI-driven vehicle detection technologies.

Keywords:

OpenCV, ResNet-50, Region Proposal Network, Faster R-CNN, Feature Extraction, Speed Estimation, Tracking

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Deep Learning based Smart Video Surveillance

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Abstract:

Developing an smart system for video monitoring that integrates Spatial Temporal Autoencoder (STAE) with OpenCV to enhance real-time monitoring and security analytics. The system leverages STAE to examine surveillance video streams cameras, automatically detecting objects of interest and identifying suspicious behaviors or anomalies. By processing and interpreting visual data, the system can recognize potential security threats, such as unauthorized access, unusual movements, or other unusual behaviors that might point to a risk. Using deep learning techniques, the system continuously monitors and classifies various activities in the video streams, providing greater degree of precision in contrast to traditional surveillance systems. When any suspicious behavior is detected, the system triggers an immediate alert, notifying security personnel or triggering automated responses. This allows for proactive intervention, reducing response times and improving overall security efficiency. The sophisticated video surveillance system has applications in protection of vital infrastructure and public safety, and commercial security, where It is useful for monitor large-scale environments like airports, shopping malls, and industrial sites. By enhancing situational awareness and automating incident detection, the system contributes to more effective crime prevention, faster incident resolution, and overall operational efficiency.

Keywords:

Video Surveillance, STAE, OpenCV, Tensorflow, Keras, Numpy, Deep Learning, Tkinter

Valuing Nature: Local Residents' Insights on the Aesthetic and Recreational Benefits of Patungan Beach in Maragondon Cavite, Philippines

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Abstract:

The Philippines, an archipelagic nation, is renowned for its rich ecotourism destinations and biodiversity hotspots. Beach tourism and water-related activities significantly contribute to the country's economy, with the tourism sector accounting for approximately 12% of the nation's Gross Domestic Product (GDP) in 2019. However, the increasing influx of visitors has led to challenges such as overcrowding, waste accumulation, and environmental degradation. Recognizing the need to safeguard natural recreational sites, this study employed the Contingent Valuation Method (CVM) to assess residents' perceived value of Patungan Beach's aesthetic and recreational benefits in Maragondon, Cavite.

Using a logit model, findings revealed that while socio-demographic characteristics do not directly influence Willingness To Pay (WTP) for site conservation, residents' attitudes toward environmental protection and water conservation play a crucial role. A significant portion of respondents expressed a willingness to contribute to a trust fund and pay an annual environmental fee of PHP 50.00 for the site's preservation, although WTP declined as the bid amount increased. Notably, 58% of respondents derive direct economic benefits from tourism-related livelihoods, underscoring the economic significance of the site.

The study emphasizes the need for local government intervention through municipal ordinances that allocate additional funding for the operation, maintenance, and conservation of Patungan Beach. Furthermore, promoting green tourism initiatives can enhance sustainable ecotourism, benefiting both the environment and local stakeholders while boosting revenue generation. Based on these findings, a Community-Based Sustainable Ecotourism Framework is proposed, centering on four key pillars: Community Engagement, Sustainable Livelihoods, Environmental Conservation, and Governance & Policy Support. This framework aims to strengthen conservation efforts while ensuring economic benefits for the local community, fostering a balanced approach to tourism development and environmental stewardship.

Keywords:

Ecotourism, Aesthetic and Recreational Services, Environmental Perceptions, Willingness To Pay (WTP)

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Design and Implementation of Framework for Optimized Relay-Timed Electronic Security System (Fortress)

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Abstract:

This study presents the design, development, and evaluation of FORTRESS (Framework for Optimized Relay Time-Relay Electronic Security System). Focused on affordability and practicality, FORTRESS utilizes readily available components for a cost-effective security solution. The prototype leverages relay logic and solenoid locks to manage access control in rooms I-208 and I-206 at Bldg. I, Pablo Umali Hall, University of Batangas.

A functional prototype was constructed using locally sourced components at an estimated cost of ₱21,350. To assess the system's effectiveness, a 22–day evaluation period focused on reliability, efficiency, and durability. The results were promising: reliability testing yielded consistently high performance, core component efficiency reached 96%, and the system functioned correctly for over 87% of a 220–hour durability test.

Based on these findings, the researchers recommend further exploration to understand minor variations observed in reliability testing. Additionally, they propose investigating the integration of advanced access control technologies like RFID and fingerprint sensors for enhanced security. Furthermore, the study suggests the potential for expanding the use of FORTRESS to secure other university laboratories housing valuable equipment.

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GRIT And Gratitude as Moderated by the Demographic Profile of Young Adults in Lipa City, Batangas

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Abstract:

The pandemic has brought multiple changes in the way of life of many people. No one was prepared for community lockdowns, distance online learning, and other policies restricting face-to-face social interactions. After more than two years of battling against the global pandemic, normalcy is slowly being put into place. Now that many are trying to get their life back together, it is relevant to appraise not only their wellbeing but more importantly the factors that may contribute to this such as gratitude and grit. A proposed mental health program is the product of this undertaking based on the result of the study.

Correlational quantitative design with moderation analysis was utilized in the study. The researchers adopted the Grit Scale and Gratitude Resentment and Appreciation Scale (GRAT) - Short Form as research instruments. Respondents were randomly selected from the city of Lipa with an age of 18–25 years old. The data gathered were analyzed using t-test, analysis of variance (ANOVA), and multiple regression. It was found that the respondents have a low level of grit but a moderate level of gratitude. It was also revealed that there is a significant relationship between grit and gratitude (r-value=0.38, p-value=0.000). Furthermore, significant differences were noted in gratitude in terms of sex profile (t-value=4.107, p-value=0.000) which means that the response varies across the said profile. Age and sex have no significant moderating effect on the level of grit of the respondents. Nevertheless, the regression model of the same profile and the level of gratitude is statistically significant with sex as the significant moderator.

Keywords:

Correlational Quantitative Design, Demographic Profile, Gratitude, Grit, Moderation Analysis, Young Adults

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Development of PsoriaBuddy: A Web-based Symptom Management for Individuals with Psoriasis

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Abstract:

This study aims to address the complex challenges faced by individuals with psoriasis in the Philippines through the development of an innovative digital platform, PsoriBuddy, that tailors treatment information based on individual patient profiles and dermatologist recommendations, creating a customized care plan for each user. The platform also provides an array of educational resources designed to increase awareness and understanding of psoriasis, its comorbidities, and effective management strategies. One of its key features is the ability for patients to track their symptoms by recording their experiences, which can be reviewed by healthcare providers during consultations, allowing for pre-assessment and improved patient-provider communication. The platform also includes a Psoriasis Area and Severity Index (PASI) tool that helps both patients and healthcare providers identify patterns, triggers, and areas requiring attention. This study evaluates the potential of PsoriBuddy to empower psoriasis patients by facilitating informed decision-making, improving symptom management, and enhancing their overall quality of care. The findings highlight the effectiveness of personalized digital health solutions in improving patient outcomes and fostering a more collaborative healthcare experience.

Keywords:

Psoriasis, Psoriasis Area And Severity Index, Psoriasis Symptom, Skin Disease

Gender Equity in the Implementation of Physical Education Activities in University of Batangas (UBBC and UBLC Campus)

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Abstract:

In today's generation, awareness of gender and development in all aspects is crucial, especially in physical education. Gender and development in this field aim to address the unique needs, circumstances, and possibilities of individuals based on their gender. It promotes an inclusive environment that challenges traditional biases and ensures equal access to physical education programs for both men and women.

The research conducted by the researcher used a descriptive method through a survey questionnaire, which was ethically distributed to 21 respondents from the University of Batangas campuses (UBBC and UBLC). The study focused on gender equity in the implementation of physical education activities at these campuses. The findings highlighted the importance of identifying students' gender and understanding their preferences in teaching physical education courses. Additionally, the study revealed that the institution provides healthcare and workplace benefits that ensure equality among respondents. Based on these insights, the researcher developed an action plan that supports gender equity in physical education classes. This plan aims to create a more inclusive and equitable environment for both teachers and students, ensuring that all individuals have equal opportunities to participate and benefit from physical education activities.

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Batangas Economy: A Historical Overview and Contemporary Transformation

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Abstract:

The province of Batangas, historically an agricultural stronghold, has evolved into a dynamic economic hub characterized by industrialization, commerce, and tourism. This study provides a comprehensive exploration of the economic trajectory of Batangas, tracing its transformation from its agricultural roots to its present industrial and service-oriented landscape. Utilizing qualitative methods, including documentary analysis of government archives and reports, the research identifies pivotal factors shaping the province's economic development, such as strategic location, infrastructure advancements, and consistent policy support. Key findings highlight Batangas' diversified economy, with industry contributing significantly to its Gross Regional Domestic Product (GRDP). Major sectors include manufacturing, energy production, and tourism. Industrial parks and the Batangas International Port have driven investments, creating jobs and stimulating local businesses. Meanwhile, the agricultural sector remains vital, with innovations in agribusiness and the resurgence of high-value crops like coffee contributing to sustain Growth. Tourism, supported by investments in infrastructure and eco-friendly initiatives, has positioned Batangas as a premier destination for domestic and international visitors. Despite its progress, the province faces challenges, including waste management, climate resilience, and balancing urbanization with environmental sustainability. Nonetheless, opportunities abound, such as industrial expansion, enhanced connectivity, and digital economy growth. The study underscores the need for inclusive governance and sustainable practices to ensure that development benefits all residents, particularly at the grassroots level. This research provides a foundation for future studies on regional economic development, offering insights into the interplay of historical influences and contemporary strategies. It serves as a roadmap for policymakers and stakeholders to foster sustainable and inclusive Growth in Batangas, cementing its role as a key player in the Philippines' economic landscape.

Keywords:

Batangas Economy, History, Contemporary Developments

Exploring the Interrelationships of Organizational Resilience, Business Continuity and Disaster Recovery: A Basis for University of Batangas Disaster Resilience Plan

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Abstract:

Disasters such as typhoons, earthquakes, volcano eruptions and pandemic have an impact on how higher education institutions perform their functions. Over the past three years, one institution, which has faced all these challenges, is the University of Batangas. The objectives of the study are to rank the disaster affecting the university operation, assess the organizational resilience, business continuity plan and disaster recovery plan, determine the significant relationship of the different components and proposed an organizational resilience action plan. In this exploratory research design, the researchers developed a researcher-made questionnaire. 165 respondents assessed the components of organizational resiliency, business continuing and disaster recovery plan. Most of the respondents that participated were college students. The researchers utilized several statistical tools in their study, including mean, standard deviation, Pearson-r correlation coefficient, and regression analysis, as the foundation for their research findings. The pandemic was considered the most disruptive disaster affecting the university operations. Significant findings on items such as risk management and readiness, organizational context and components of the business continuity plan were considered in the preparation of the plan. Business continuity and catastrophe recovery plans are strongly correlated with or associated with organizational resilience. Disaster recovery plans are heavily impacted by the business continuity plan. The proposed university organizational resilience plan may make UB agile in addressing and handling disruptions or disasters, maintaining the operations function and delighting the stakeholders. Lastly, it is recommended that the proposed organizational resilience plan may be implemented to evaluate its effectiveness as the basis for future research.

Keywords:

Business Continuity Plan, Disaster Recovery Plan, Disruptions, Organizational Resilience

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Disaster and Risk Reduction Practices Among Employees of Accredited Hotels and Restaurants in Batangas Province: Basis for Disaster Management Plan

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Abstract:

Disaster Risk Reduction and Management (DRRM) is vital for hotels and restaurants in Batangas Province. This study explored DRRM practices among 21 accredited establishments, surveying 253 employees and managers. Most respondents were female, aged 21–30, single, and employed in businesses operating for 16–20 years. They generally held permanent positions.

Findings showed high levels of prevention, assessment, analysis, and monitoring of community-based DRRM. Preparedness efforts focused on equipping employees with crucial skills for dealing with calamities. In terms of response, search, rescue, and retrieval practices were widely implemented, while recovery efforts emphasized stimulating economic activity. However, inadequate emergency funds posed a significant challenge.

Although employees demonstrated strong awareness of search and rescue procedures, mental health support remains an area needing improvement. A lack of disaster literacy also surfaced, suggesting a need for more comprehensive training. Notably, preparedness was positively correlated with the number of years in business.

Overall, these results underscore the importance of robust DRRM strategies. The researchers recommend implementing a comprehensive disaster management plan to address financial constraints, strengthen mental health support, and enhance disaster literacy, ultimately contributing to safer and more resilient hotels and restaurants in Batangas Province.

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Outcomes During the COVID-19 Pandemic: Basis for the Proposed Elementary Reading

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Abstract:

Reading is a fundamental skill, and its acquisition among children is a significant triumph in their development. Unfortunately, the challenges faced by many countries in developing reading literacy have been further widened by the Covid-19 pandemic. This resulted in governments implementing policies such as school closures and the need to shift to remote learning modalities, thus signifying limited opportunities to develop reading skills among children. This research aims to examine children's reading skills in terms of the following components of early literacy, oral languages, phonological awareness, alphabet knowledge, phonics, vocabulary development, and reading comprehension. Also, it seeks to identify the best evaluation methods, activities and materials to be utilized in the intervention program to promote literacy among pupils enrolled in the Longitudinal Reading Program. The descriptive research design was employed, and data were collected using a self-structured interview questionnaire. Data analysis utilized a mixed-method approach, which allows the collection of both quantitative and qualitative data. The results indicated that the majority of Grade 1 pupils are still refining their oral language skills, particularly in recognizing and manipulating phonemes within words. Additionally, many pupils are in the early stages of vocabulary acquisition. In teaching reading, the involvement of parents in facilitating their children's reading developmental activities is deemed pivotal in the advancement of the literacy skills. The findings suggest that pupils attain optimal reading proficiency through a combination of printed materials and video lesson support. Future intervention programs should encompass parental training and adopt a flexible modular framework to offer personalized assistance.

Keywords:

Reading, Reading Comprehension, Reading Materials, Intervention, Descriptive Research, Philippines

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An Assessment of the Adolescent Telemental Health Services Available in Batangas

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Abstract:

The practice of telemental health has been around the globe for more than five decades. Due to the growing concern about adolescents' mental health, the authors decided to conduct the study to assess adolescent telemental health services in the province. The goal of the study is to explore the current experiences of clients and professionals in terms of mental health, to measure their satisfaction, and to develop guidelines on the use of telemental health services to suit their needs. The researchers used an exploratory sequential design with two phases. For the satisfaction survey, nine domains were identified for the professionals, which are Convenience, Depression/Anxiety, Time Limit, Similarity with Face-to-Face, Confidentiality, Internet Connection, Power Supply, Competence, and Ethical Guidelines Integration and 12 domains for the adolescent clients which are Frequency, Positive Experience, Psychological Wellness, Telemental Health Platform, Session Duration, Actionable Plans, Getting the Root Cause of Problems, Privacy, and Confidentiality, Service Satisfaction, Satisfaction on the Practitioner, Formulation of Solution, and Competency of Practitioner. Upon measuring the satisfaction of both groups, the researchers created guidelines to ensure satisfaction. Phase 2 investigated the change in the satisfaction of telemental health users and concluded by revising the guidelines.

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Looking into the Children's Eyes: The Experiences of Offsprings in Parental Separation

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Abstract:

Parental separation profoundly impacts children's emotional, psychological, and social well-being. While most research focuses on its aftermath, few studies examine how pre-separation experiences shape short- and long-term effects. This study explores the lived experiences of adults who witnessed parental separation during early adolescence. Using a phenomenological approach, six (6) participants from Batangas Province were selected through purposive sampling. Data were collected through in-depth interviews and analyzed using the modified Colaizzi method. Findings reveal that pre-separation experiences fall into two categories: constant exposure to parental conflicts or a perceived sense of normalcy. Witnessing frequent disputes, parental irresponsibility, and infidelity led to embarrassment, withdrawal, and emotional suppression, while those shielded from conflicts developed a false sense of security that later affected their coping mechanisms. Post-separation effects included economic instability, premature role shifts, and family fragmentation. Participants faced financial burdens, educational disruptions, and sibling separation, contributing to emotional distress, biased perceptions against one parent, rebellion, and reconciliation fantasies. Some, however, reported a sense of relief from reduced parental conflict. Long-term effects varied: those exposed to conflict often experienced unresolved resentment, relationship difficulties, and internalized negative self-beliefs, while others showed positive adaptation and growth. However, a key finding is that none of the participants achieved full healing, as emotional scars persist into adulthood. To address these challenges, the Healing through Integrative Life-Oriented Method (HILOM) Program was developed to foster emotional recovery, self-awareness, and resilience.

Keywords:

Long-term Effects of Separation, Offspring Experiences, Post-parental Separation, Pre-parental Separation, Short-term Effects of Separation

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Exploring Efficient Cemetery Management: Practices, Challenges and Innovations at New Bilibid Prison Cemetery as a Basis for Improved Operational Effectiveness and Sustainable Development

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Abstract:

Efficient cemetery management is crucial for ensuring operational effectiveness and sustainable development, particularly in facilities with unique challenges like the New Bilibid Prison (NBP) Cemetery. This study investigated the existing practices and challenges and suggested innovative strategies to be implemented at the NBP Cemetery to improve its management and operations. Employing a mixed methods approach, data were gathered through surveys and semi-structured interviews with six personnel responsible for cemetery operations. Findings highlight the identified existing cemetery practices, the challenges faced by NBP Cemetery in terms of its operational effectiveness and sustainability, and lastly, the identified innovative solutions to be implemented in addressing these challenges.

Keywords:

Cemetery Management, Challenges, Practices, Cemetery Policies, NBP Cemetery

Learning Innovation Using Technology (Google maps) in Mathematics Junior High Schools

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Abstract:

This research evaluates the effectiveness of the Realistic Mathematics Education (RME) approach and the STAD (Student Teams Achievement Divisions) cooperative learning model in enhancing problem-solving and critical thinking skills in junior high school students, particularly in the topic of lines and angles. The research results show a significant increase in problem-solving and critical thinking abilities. The average problem-solving score rose from 48.48 to 80.68, with the standard deviation decreasing from 13.02 to 7.44, indicating more uniform learning outcomes. Students' critical thinking abilities also significantly improved. The mean score increased from 35.98 to 73.48, with the standard deviation decreasing from 11.61 to 6.62, indicating that the variation in scores among students is decreasing. This reflects that the intervention implemented was successful in increasing the consistency of critical understanding throughout the class. In addition, not a single student scored below 66.66 on the Post-Test in all three aspects measured. This demonstrates that all students have met the expected minimum competency levels, indicating that the RME approach and STAD model are highly effective in enhancing problem-solving and critical thinking skills.

Keywords:

Innovations, Google Maps, RME, STAD Mode

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Development of CancerLine Companion: A Mobile-based Information Hub for Cancer Care in Davao City

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Abstract:

This study explores the development and implementation of a mobile application designed to serve as an information hub for cancer patients in the Philippines, aimed at supporting them and their companions in their journey through cancer management. With the increasing prevalence of cancer and the challenges faced by patients in accessing accurate and timely information, this research focuses on creating a digital solution that consolidates essential resources, such as healthcare facilities providing outpatient and inpatient chemotherapy services, details on financial institutions providing support, and local support groups. The mobile application integrates user-friendly features, including personalized journaling, and a comprehensive database of medical facilities and specialists. It also provides access to community support networks tailored to the specific needs of Filipino cancer patients. Through user feedback and iterative development, this study evaluates the effectiveness of the application in enhancing patients' access to information, improving their overall treatment experience, and empowering them to make informed decisions regarding their health. The findings underscore the potential of mobile health technologies in addressing gaps in cancer care and providing continuous, accessible support for patients in the Philippines.

Keywords:

Cancer, Cancer Care, Companions, Information Hub

Development of CounselorConnect: A multi-platform Application for Student Wellness and Counselor Insights

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Abstract:

The rising prevalence of stress and emotional challenges among students necessitates innovative solutions to support their mental well-being. CounselorConnect (COCO) is a multi-platform application designed to support the mental well-being of students by empowering them with tools for stress management and connecting them with guidance counselors. Key features include guided meditation, mood tracking, wellness tips, and consultation booking for timely interventions. Developed using iterative design and evaluated through the Technology Acceptance Model (TAM), COCO prioritizes accessibility and user satisfaction. Feedback from students and counselors highlights its effectiveness in fostering resilience and bridging gaps between self-help and professional support within academic settings.

Keywords:

Stress Management, Student Distress, Guidance Counseling, TAM, Distress, Mental Health

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Academic Stakeholders' Level of Perceived Barriers to Accessing Mental Healthcare

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Abstract:

This study investigates the perceived barriers to accessing mental healthcare among academic stakeholders, including students, faculty, and support service personnel at a university in Davao City, Philippines. In light of the escalating stressors in academic environments that contribute to mental health issues, the research examines how demographic factors (such as sex, socioeconomic status, and institutional role) and individual mental health status (classified as languishing, moderate, or flourishing) affect access to mental health services. A review of prior literature indicates that practical constraints (instrumental barriers), negative attitudes toward help-seeking (attitudinal barriers), and societal stigma are significant impediments. The findings of the study are intended to guide the creation of targeted interventions, including the establishment of a Mental Health Wellness Center, to foster a more supportive academic environment.

Employing a quantitative descriptive-comparative design, the study surveyed 540 academic stakeholders using two standardized instruments: the Mental Health Continuum–Short Form (MHC-SF) to evaluate overall mental well-being and the Barriers to Access to Care Evaluation (BACE V3) to measure perceived barriers. Participants were selected through stratified sampling from the populations of students (64.8%), faculty (21.1%), and support service personnel (14.1%). Data were collected via self-administered questionnaires and subsequently analyzed using frequency distributions, mean scores, standard deviations, One-way ANOVA, and t-tests to identify significant differences among groups.

Out of the 540 respondents, 223 (41.3%) were classified as flourishing, 287 (53.1%) as having moderate mental health, and 30 (5.6%) as languishing. Analysis revealed that faculty members reported the highest perceived barriers to accessing mental healthcare. For instance, while students and support service personnel exhibited average barrier scores in the lower to moderate range (mean scores approximately 1.7–1.8 on a scale of 0 to 3), faculty members demonstrated a significantly higher mean barrier score of around 2.1 ($p < 0.05$). Moreover, respondents identified as languishing reported markedly more significant challenges—across instrumental, attitudinal, and stigma-related domains—compared to their moderate and flourishing counterparts. These values underscore the impact of both demographic and mental health status differences on barriers to care and highlight the necessity of tailored interventions for groups at higher risk.

The study concludes that substantial barriers hinder academic stakeholders from accessing necessary mental healthcare services. With 5.6% of respondents classified as languishing mental health and 53.1% having moderate mental health, and with the faculty members showing significantly higher perceived barrier scores, the findings

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indicate an urgent need for institutional support. Recommendations include establishing a dedicated Mental Health Wellness Center and implementing regular initiatives—such as monthly mindfulness sessions, stress management workshops, and peer support groups—to reduce practical and psychosocial impediments and improve overall mental health outcomes.

Keywords:

Psychology, Academic Stakeholders, Perceived Barriers, Mental Healthcare, Philippines

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Student Satisfaction in BEED Programs: A Study on Academic Resources and Institutional Services

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Abstract:

Student satisfaction is a crucial measure of the quality of education, institutional effectiveness, and overall learning experience in higher education. This study examines the factors influencing the satisfaction of Bachelor of Elementary Education (BEED) students, focusing on the role of academic resources, institutional support services, and external factors. Using a mixed-methods research design, the study employed quantitative surveys and qualitative interviews to assess the impact of these variables on student satisfaction.

Findings revealed that while academic resources such as libraries, laboratories, and classroom facilities were generally sufficient, they were not the strongest predictors of satisfaction. Institutional support services, including academic advising, counseling, and administrative assistance, showed variations in effectiveness, highlighting the need for enhanced accessibility and consistency. Among all factors examined, external influences such as financial stability, family support, workload, and faculty engagement had the most substantial impact on student satisfaction. Challenges such as limited library resources, slow internet connectivity, and insufficient counseling services further contributed to student stress.

The need for a holistic approach to improving student satisfaction, emphasizing enhanced technology-integrated classrooms, expanded financial aid programs, better student wellness initiatives, and structured academic support services was the main take away of this study. Additionally, a continuous student satisfaction monitoring system is recommended to ensure responsive institutional improvements. By addressing these challenges, SLSU-JGE BEED Program can create a more student-centered academic environment, ensuring that BEED students receive the necessary resources and support to thrive in their academic and professional journeys.

Keywords:

Student Satisfaction, Academic Resources, Institutional Support, External Factors, BEED students

BerryBoddy Automated Greenhouse

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Abstract:

This study explores the development and implementation of the BerryBoddy Automated Greenhouse to optimize strawberry yield at BEMWA Farm Fresh Inc., in Marilog District, Davao City, Philippines. Designed to address challenges in net-house strawberry farming—such as vulnerability to fungal diseases like blight and the need for precise irrigation and humidity control—the system integrates an Arduino Mega 2560 microcontroller with soil moisture, temperature, and humidity sensors. The AI camera detects blight using color recognition algorithms, allowing proactive disease management. By automating environmental conditions, irrigation, and disease detection, the BerryBoddy promotes healthier plants and higher yields without using chemical intervention. Testing confirmed reliable irrigation below 50% soil moisture and effective climate control when temperature exceeded 28°C or humidity rose above 65%, demonstrating the system's effectiveness in maintaining ideal growing conditions. With an 87% blight detection accuracy, the BerryBoddy Automated Greenhouse presents a promising approach to sustainable strawberry farming through efficient climate control, irrigation, and proactive disease management.

Keywords:

Computer Engineering, Blight Detection, Strawberry, Automated Greenhouse, Fungal Disease, Automated Irrigation, Philippines

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Extents of Community Participation in Tourism Activities and the Quality Oflife Among the Locals in Barangay Adecor, Island Garden City of Samal, Philippines

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Abstract:

The tourism activity in the Island Garden City of Samal, Davao del Norte, Philippines, has increased for the past few years and may have affected the quality of life of the residents. Thus, this study aimed to know the extent of community participation of the locals of Barangay Adecor in certain tourism-related activities and their quality of life. This study used the descriptive-correlational method to investigate the effect of community participation on the quality of life of the residents. Further, it also used the descriptive-comparative method to compare community participation and quality of life based on the profile of the purposively chosen respondents. The results revealed that the respondents are usually aware of planning, decision-making, management, and evaluation. Their quality of life in terms of being and belonging is excellent, and becoming is above average. Also, the significance of the relationship exists between the respondents' extent of community participation and quality of life ($p<.05$). Hence, when the extent of participation increases, there is a tendency for their quality of life to improve. Notably, the community participation of males and those aged between 31–40 years old is significantly higher than that of their counterparts. However, their quality of life is comparable regardless of sex, educational attainment, age, and occupation.

Keywords:

Tourism, Community Involvement On Tourism, Quality Of Life, Descriptive Study, IGaCoS, Davao del Norte, Philippines

Judged at First Sight: The Impact of Public Perception and Online Objectification

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Abstract:

In today's world, people are judged on looks or who they are walking with. For example, when a young couple of a woman and man walk down the street, people jump to conclusions that they are lovers without considering even the possibility that they are friends or family members. These rash judgments lead to unfair tags and gender stereotypes.

Things are even bad on social media. Adult content is liked and viewed more than useful or positive posts. This shows that people are more attracted to inappropriate or shocking content. It also makes disrespectful behaviour, like making rude comments about women, seem normal. This encourages casual harassment and reduces empathy.

This paper looks at how being misjudged or treated poorly online affects people's emotions and mental health. It shows how constant exposure to objectification lowers self-confidence and trust in others. The research employs surveys, case studies, and facts to demonstrate how public opinion and social media influence individuals' perceptions.

The paper also proposes remedies, including the promotion of kindness and awareness through public campaigns, responsible use of social media, and stricter regulations against online bullying. By teaching empathy and digital responsibility, society can fight against gender bias and create a more caring and fair environment.

This research hopes to make people aware of the harmful effects of quick judgments and online objectification, aiming for a more respectful and understanding society.

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Loan Approval Prediction using Machine Learning

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Abstract:

The financial industry has been progressively depending on data-driven solutions in order to increase process efficiency and the accuracy of decisions. The research focuses on machine learning algorithm applications for the prediction of loan approval, optimizing model performance as well as pre-processing techniques. Through the evaluation of multiple classifiers that include Gradient Boosting, Random Forest, Decision Tree, K-Nearest Neighbor, and Support Vector Machine, the study has determined the best approach for the given classification problem.

The experimental results show that the Support Vector Machine(SVM) performed the best with an accuracy of 77.27%. Gradient Boosting and Random Forest showed competitive performances in handling complex datasets. On the other hand, simpler models like Decision Tree and K-Nearest Neighbor were less accurate and demonstrated the need for more sophisticated methods in such tasks.

The results highlight the potential of machine learning in automating and improving loan approval systems, providing faster and more consistent decisions than traditional manual methods. This research provides a foundation for future developments, including the integration of deep learning techniques, the use of feature selection strategies, and the development of web-based predictive tools. The implications are not limited to loan approval but extend to broader applications in financial decision-making [5,8], demonstrating the transformative impact of machine learning on the industry.

This study has demonstrated how machine learning can enhance predictive analytics [4] by dealing with challenges like missing data and balancing categorical and numerical attributes. The results highlight the requirement for continuous model refinement to accommodate the dynamic real-world requirements and thus sustain accuracy and reliability.

Keywords:

Loan Approval, Machine Learning, Random Forest, Gradient Boosting, Support Vector Machine, Data Preprocessing, Predictive Analytics, Financial Decision-Making, Classification Models, Loan Eligibility, Automation, Feature Engineering

1. INTRODUCTION

Loan approval is an integral part of the financial industry. Traditional loan-eligibility evaluation procedures are slow and prone to biases. This flaw demands the design of automated systems that can make objective, accurate, and timely decisions. With the advent of machine learning, the financial industry is undergoing tremendous transformations wherein data-driven models are redesigning the traditional approach.

Machine learning is thus used for pattern identification and prediction on large data sets, and it is independent of human bias. In loan approval[1,2], models analyze different demographics, financial data, and credit information to predict the chance of approval. This paper researches an optimized approach in the automation [4] of loan approval process through algorithms that best fit the task of classification like Support Vector Machines and Random

Forests.

For this study, the dataset comprises 614 records, including applicant attributes such as income, credit history, and property details. These variables were chosen in order to reflect real-world considerations for financial decision-making. Multiple preprocessing techniques applied here include handling missing data and encoding categorical variables to get the dataset fit for machine learning models.

This project is aimed to contribute to the financial sector by providing insights regarding how machine learning can improve the efficiency and accuracy of loan processing. The result, with SVM being one of the high performing models, exemplifies the fact that these technologies can be assimilated into an existing workflow. Technical considerations aside, this paper emphasizes a much more comprehensive scenario under which this technology will be implemented in financial systems, opening avenues for innovations to meet the needs of the industry.

This paper is organized as follows: Section 2 presents

the review of the related works loan approval prediction using machine learning; Section 3 describes the dataset used in the study; Section 4 describes the methodology adopted and AI models

used in the study; Section 5 discusses the Comparative Evaluation and results of this research; Section 6 limitation and challenges Section 7 Future work for research in this area; and section 8 conclude the research .

2. RELATED WORK

Loan approval prediction is an important problem studied in-depth by the financial sector. It improves the decision-making process and minimizes risks by applying machine learning techniques. Various approaches have been proposed to solve this problem, which differ based on feature selection, algorithm choice, and system optimization.

Fati et al. (2021) discussed and experimented on several machine learning models, which included Logistic Regression, Decision Trees, and Random Forest for the loan approval prediction. The result obtained indicated that the best model for the problem is Logistic Regression [7] since it has shown the best accuracy in precision, recall, and Area Under the Curve (AUC). It also focused on the preprocessing step, which involved handling missing values, removing outliers, and checking feature correlation analysis to improve model performance.[1]

Similarly, Aphale et al. (2020) used supervised learning algorithms like regression and classification models to classify borrowers as defaulters or non-defaulters. The research used real bank credit data and illustrated the utility of ensemble models in improving the reliability of predictions.[2]

Yu et al. (2024) developed an optimization algorithm-enhanced XGBoost model based on a four-vector optimization algorithm. This model showed greater accuracy compared to the traditional machine learning model. In addition, feature selection was highlighted by the use of correlation heat maps that could permit improved variable interactions and enhance the model's robustness in practice.[3]

Most of the research works highlighted that feature engineering is a necessity. For example, Diwate et al. (2021) and Nishita et al. (2023) concentrated on some key variables like credit score, income, loan amount, and debt-to-income ratio. The authors showed that these features are essential for obtaining good prediction accuracy. Another critical preprocessing step highlighted is normalization and treatment of categorical variables.[4][5]

Hybrid approaches and deep learning have been pursued. Singh et al. (2021) and Kumar et al. (2016) discussed hybrid approaches that combine decision trees and ensemble techniques such as Random Forest and XGBoost for greater accuracy. Yu et al. (2024) suggest that adaptability in real-time should be achieved through online learning algorithms by making models adjust in real time as new data comes along.[6][8]

Despite these advancements, the following issues still exist: class imbalance, overfitting, and generalizability to real-world datasets. These issues alone require further research to be conducted toward the development of scalable, reliable, and interpretable solutions for loan approval prediction.

3. DATASET

This dataset consists of 614 records with mixed features of demographic, financial, and loan-related features. This diversity in the data itself ensures the comprehensive coverage of factors determining loan approval [1,2]. The features involved are as follows:

- Loan_ID: Unique identifier assigned to each loan application.
- Gender, Married, Dependents: Demographic attributes providing insights into the applicant's family structure and support system.
- Education, Self_Employed: Employment-related

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attributes indicating the applicant's qualifications and job status.
- ApplicantIncome, CoapplicantIncome, LoanAmount, Loan_Amount_Term: Important variables representing the earning ability of applicant, financial liabilities, and loan terms.
- Credit_History: Binary variable based on whether the applicant is creditworthy in the light of past records.
- Property_Area: The city in which the applicant resides or the locality of the property in terms of urban/ semiurban/rural.
- Loan_Status: Response variable that would express whether a loan was sanctioned (Yes/No).

This dataset mirrors the real-world implications of decisions on finance and will give a sound basis for predictive models [2]. There are numerical as well as categorical variables, so preprocessing [4] and modelling tasks are also interestingly different.

3.1. Data Preprocessing

For data analysis and modelling purposes, the following preprocessing operations [1,4] were performed on the dataset.

Handling Missing Attributes: All numerical attributes such as "LoanAmount" were mean-imputed unbiased and the data was allowed to have consistency. For categorical variables like "Credit_History", mode was used for imputation so that its categorical values are not violated.

Encoding the categorical variables: Attributes like "Gender" and "Property_Area" of the type categorical values have been translated to numerical with Label Encoding [4] for easier use of ML algorithms.

Scaling and Normalization: The financial feature "ApplicantIncome" and "LoanAmount" were scaled and normalized for reducing the outlier effect and unifying the dimension of features.

Feature Selection: Features that seemed irrelevant or redundant were analyzed and excluded to maximize efficiency and accuracy within the model.

Handling Data Imbalance: The data contained class imbalance in the loan status feature. This was addressed by employing Synthetic Minority Oversampling Technique (SMOTE) to generate synthetic samples of the minority class, yielding class balance and improved prediction performance.

These steps created a clean balanced dataset that suited training machine learning models [2,3], freeing the algorithms from noise and concentrating on meaningful patterns and relationships between the data points.

4. METHODOLOGY

This research methodology focuses on choosing, implementing, and evaluating various machine learning models in order to successfully predict loan approval. The major steps are described below, including algorithm selection, integration of data preprocessing [1], and evaluation strategies in a holistic and methodical approach.

4.1. Algorithms Used

It integrates various machine learning algorithms, each with its own strengths, for comparison of their performance in different datasets and scenarios to check accuracy, efficiency, scalability, and adaptability. It helps to select the best algorithm for the task and the challenge.

Gradient Boosting Classifier: This ensemble method constructs models iteratively, and reduces errors based on previous iterations. It addresses complicated data sets holding both categorical and numerical features with robustness against overfitting and robust predictive power, although optimal performance depends on careful tuning of hyperparameters [3,4], such as the learning rate, number of estimators, and tree depth, in order to prevent overfitting.

Random Forest Classifier: The Random Forest Classifier [1,4,6] is most likely the ensemble method used more than any other to increase classification accuracy and, simultaneously, decrease overfitting variance in the dataset. Because it correctly deals with missing data and outliers, this algorithm is robust for real datasets. Feature importance metrics are provided for better interpretation of the models. Hyperparameters like the number of trees to look at and max depth have to be tuned in order to reach the best outcome for specific classification tasks.

Decision Tree Classifier: The decision tree classifier [1] is a simple, interpretable model that uses tree-based splitting for data on the basis of feature values to predict. It often serves as a baseline to compare with more complex models. The simplicity of this model, however, leads it to overfitting, particularly when deep trees are used. Techniques such as pruning are used to limit the depth of the tree so that generalization improves and hence enhances the performance on unseen data.

K-Nearest Neighbor (KNN): KNN is a non-parametric, instance-based algorithm that makes data points fall under categories based on proximity to k-nearest neighbors [1,5] in the feature space. A class label can then be produced

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from the voting majority from these neighbors. KNN does well when applied to smaller datasets with high separation between classes. However, with a higher size of datasets, it loses its applicability since it increases computational time. Moreover, it also performs poorly on imbalanced data distributions since it tends to favor the majority class when generating predictive results.

Support Vector Machine (SVM): SVM [1,2,8] is one of the strong classification algorithms, it makes the best possible hyperplanes for separating the data points to their classes. It also performs well in high-dimensional space: it determines the best boundary between classes. SVM supports various kernel functions; it can apply linear, polynomial, and radial basis functions in order to model equally both linear and non-linear data. Therefore, SVM can be summed up as a powerful tool for complex classification problems with complex decision boundaries.

4.2. Model Evaluation

The performance of the machine learning models needs to be evaluated to decide whether they can be used for this task. The following evaluation metrics [2] are used in this study:

Accuracy : It is defined as the number of correctly predicted instances divided by the total number of predictions.

$$\frac{(TP + TN)}{(TP + FP + TN + FN)}$$

Fig 1: Formula of Accuracy

Precision: It measures the ratio of true positive predictions to total positive predictions, thereby indicating that the model has evaded false positives [5].

$$\frac{TP}{TP + FP}$$

Fig 2: Formula of Precision

Recall: It calculates the ratio of true positives [2] to all actual positive instances, thus describing the sensitivity of the model.

$$\frac{TP}{TP + FN}$$

Fig 3:Formula of Recall

F1-Score: The harmonic mean of precision and recall. It makes sure that the computed score is fair in the cases of imbalanced datasets.

$$\frac{2}{\frac{1}{precision} + \frac{1}{recall}} = \frac{2 * precision * recall}{precision + recall}$$

Fig 4: Formula of F1-Score

Cross-Validation: This is using a 5-fold cross-validation approach to train and compare models while checking the performance against multiple subsets of training and testing.

Table 1: Confusion Matrix

	Predicted Approved	Predicted Not Approved
Actual Approved	True Positive	False Positive
Actual Not Approved	False Negative	Ture Negative

4.3. Implementation Steps

Data Splitting: The data is split into training and testing sets in the ratio of 70:30 to test models on unseen data.

Model Training: Each algorithm is trained with the preprocessed training dataset. For ensemble models like Gradient Boosting [1] and Random Forest, hyperparameters are tuned using grid search.

Prediction: Trained models predict loan approval on the testing dataset.

Comparison: Models are compared to the evaluation metrics. From there, the best algorithm for the job is derived.

4.4. Tools and Libraries

The following tools and libraries were used to implement the methodology:

- Scikit-learn: It provided a comprehensive suite of machine learning algorithms, preprocessing utilities, and evaluation metrics.
- Pandas and NumPy: Used for data manipulation and statistical computations.
- Matplotlib and Seaborn: Enabled visualization of feature distributions and model performance comparisons.

5. RESULT

5.1 Model Performance

Machine learning models on loan approval dataset [3] will have different metrics of performance for the strength and weakness of every model. Among the tested algorithms

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are:

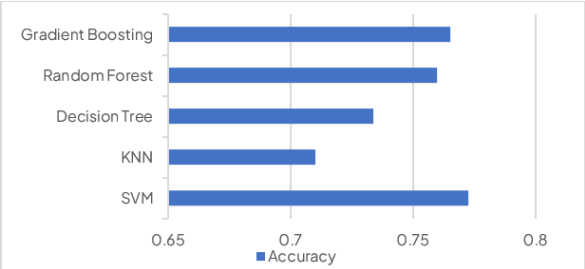
The best model was Support Vector Machine(SVM) with an accuracy of 77.27%, hence showing its efficiency to work on high-dimensional data and to form the appropriate decision boundaries. Kernel [8] tricks help it take advantage of making those non-linear patterns that exist in the database. Having achieved such a high rate of accuracy, the model may face difficulties in computational complexity for large datasets.

Gradient Boosting, which achieved 76.32% accuracy, was also competitive. It has sequential learning where the mistakes of previous iterations are corrected to adapt well to the precise outcome prediction but at a computationally expensive price that requires cautious tuning of the hyperparameters so that overfitting does not occur.

Random Forest operated at a lower accuracy of 75.97% but came with benefits on interpretability and feature importance analysis. Its ensemble approach with the use of many decision trees ensures that it was both robust and less prone to overfitting. Random Forest has the ability to work well with mixed data types and missing values.

Decision Tree An accuracy of 73.37% was provided by decision tree as the simplest easy to interpret model as it is simple and intuitive, hence easy to comprehend the decision making process, unfortunately, it easily overfits both training and data. Pruning regularization can reduce overfitting.

K-Nearest Neighbor (KNN), which performed with 71.42% accuracy, was also outperformed by the rest. This method proved sensitive to scaling and distribution issues with respect to feature imbalance. Preprocessing for such learning techniques requires attention, therefore.



Graph 1: Performance of the Algorithms

5.2 Key Observations

Feature Interactions: Both SVM and Gradient Boosting models were able to well capture complex feature interactions, which is one reason for their success.

Handling Missing Data: Ensemble models such as Random Forest were robust in handling missing data, thus reducing the complexity of preprocessing.

Scalability: SVM and Gradient Boosting performed with higher accuracy, however, computational cost indicated a compromise between high predictability and efficiency.

5.3 Comparative Evaluation

Comparative study of different machine learning models was conducted to identify the most appropriate among them for predicting loan approval. Support Vector Machine (SVM) was found to perform best among others with 77.27% accuracy, displaying high generalization ability for high-dimensional data. Gradient Boosting and Random Forest followed, exhibiting high predictive strength and robustness. Random Forest was easily interpretable but with a little decrease in accuracy. Simpler models like Decision Tree and KNN were having problems with complex patterns and class imbalance. Between accuracy, scalability, and interpretability, SVM was the optimal model based on these criteria and is therefore a suitable candidate for use in financial institutions.

Table 2 : Comparative Analysis(1)

Algorithm	Accuracy (%)	Computational Efficiency	Scalability
SVM	77.27	Moderate	Moderate
Gradient Boosting	76.32	Moderate	High
Random Forest	75.97	High	High
Decision Tree	73.37	High	High
KNN	71.42	Low	Low

Table 3 : Comparative Analysis(2)

Algorithm	Interpretability	Handling Imbalanced Data	Robustness
SVM	Moderate	Good	High
Gradient Boosting	Moderate	Good	High
Random Forest	High	Good	High
Decision Tree	High	Poor	Low
KNN	Low	Poor	Low

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5.4 Real-Time Deployment Considerations

Deploying machine learning models for real-time loan authorization entails the tackling of several crucial challenges that range from computational effectiveness to system interoperability and conformity with regulations. Optimizing latency is critical as financial institutions demand real-time decisions. Latency can be optimized using compression methodologies in the model, i.e., pruning and quantization, to conserve computing overhead while achieving accuracy.

Another major concern is scalability, so that the system can handle thousands of loan requests at the same time. Cloud deployment with options like AWS SageMaker or Google Cloud AI can handle distributed processing and auto-scaling capabilities.

Moreover, regulation compliance and equality should be assured. Explainability techniques like SHAP values or LIME aid in providing visibility in decision-making, rendering model predictions comprehensible to stakeholders. Model monitoring ought to be persistent such that data drift can be identified and the model re-trained periodically. Leveraging APIs to enable seamless integration with banking infrastructures ensures efficient automation and adequate real-time handling.

6. LIMITATION & CHALLENGES

The machine learning model that was developed to evaluate loan approval for prediction was prone to the following challenges:

Handling Missing Values: The dataset consisted of a high number of missing values in crucial attributes such as "Credit_History" and "LoanAmount." Such missing values had to be handled using careful imputation techniques to maintain data integrity without inducing biases. Even with mean and mode imputation, there was information loss that might have impacted the accuracy of the model.

Balance between Categorical and Numerical Attributes: The dataset was a mix of categorical and numerical variables, hence the need for diverse preprocessing techniques.

Data Imbalance: The target variable "Loan_Status" is imbalanced and affects the model's performance, so oversampling or class weighting is needed for better predictions in the minority class.

Computational Complexity: High-performance models, such as SVM and Gradient Boosting, took a lot of resources and didn't scale too well with big data.

Overfitting: Overfitting was observed for the simpler models, like Decision Trees, for which regularization would be necessary.

Future iterations would be able to improve scalability, accuracy, and robustness with these improvements.

7. FUTURE WORK

To address the challenges encountered and further improve the solution, the following future directions are proposed:

Deep Learning Techniques: By employing the state-of-the-art neural network [8] model like feedforward and recurrent networks, there is a good scope for improving the accuracy of predictions with abundant computing resources.

Feature selection and engineering: Recursive feature elimination (RFE) and Lasso regularization further decrease the input feature set's dimensionality by picking the most relevant features. Other than that, engineering new features also improves the predictability.

Imbalanced Data: The methods involved are SMOTE (Synthetic Minority Oversampling Technique) or cost-sensitive learning to balance the datasets such that the minority class is represented suitably.

Hybrid and Ensemble Models: Ensemble techniques like stacking or blending can combine the strengths of multiple algorithms to improve model performance. The combination of SVM and Gradient Boosting might result in better performance.

Real-Time Applications: This would be developed as a web or mobile application. The requirements for scalability and low latency of predictions necessitate a scalable system at the back end.

Strategies for Real-Time Flexibility in Online Learning: E-learning enables models to be updated automatically with new loan application data, hence making them adaptive to changes in economic trends. Incremental learning methods such as Stochastic Gradient Descent (SGD) and adaptive decision trees maintain the predictions current over time. It assists in avoiding biases caused by outdated training data and enhancing real-time decision-making.

8. CONCLUSION

This research study shows promise in the field of machine learning for transforming loan approval processes. The research is conducted using different models, including Support Vector Machine (SVM), Gradient Boosting, and

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Random Forest, which can predict loan approvals with good accuracy and consistency. SVM performed the best with an accuracy of 77.27%, followed by Gradient Boosting and Random Forest.

Thus, the incorporation of strong preprocessing steps ensured the purity of the data and optimal outputs by models. In light of data imbalances and computations, the presented models had substantial potential for realistic applications.

This work paves the way for future improvement: deep learning integration, feature engineering improvement, and deployment as real-time solutions. Addressing these limitations is how this research sets the way forward for efficient, transparent, and scalable machine learning systems in financial decision-making.

REFERENCES

[1] Fati, S. M. (2021). Machine learning-based prediction model for loan status approval. Journal of Hunan University Natural Sciences, 48(10).

[2] Aphale, A. S., & Shinde, S. R. (2020). Predict loan approval in banking system machine learning approach for cooperative banks loan approval. International Journal of Engineering Trends and Applications (IJETA), 9(8).

[3] Yu, K., Xia, S., Zhang, Y., & Wang, S. (2024). Loan approval prediction improved by XGBoost model based on four-vector optimization algorithm. Applied and Computational Engineering, 82, 35–44.

[4] Nishita, P., Bhowmik, B., Gayani, P. R., Avantika, R., & Singh, S. P. P. Loan Approval Prediction.

[5] Diwate, Y., Rana, P., & Chavan, P. (2021). Loan approval prediction using machine learning. International Research Journal of Engineering and Technology (IRJET), 8(05), 1741–1745.

[6] Singh, V., Yadav, A., Awasthi, R., & Partheeban, G. N. (2021, June). Prediction of modernized loan approval system based on machine learning approach. In 2021 international conference on intelligent technologies (CONIT) (pp. 1–4). IEEE.

[7] Nalawade, S., Andhe, S., Parab, S., & Sankhe, A. (2022). Loan Approval Prediction. International Research Journal of Engineering and Technology, 9(04), 669–673.

[8] Arun, K., Ishan, G., & Sanmeet, K. (2016). Loan approval prediction based on machine learning approach. IOSR J. Comput. Eng, 18(3), 18–21.